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A Clinical Lecture

ON

CHRONIC PAROXYSMAL TRIGEMINAL NEURALGIA AND ITS TREATMENT.*

BY

WILFRED HARRIS, M.D.CANTAB., F.R.C.P.,

SENIOR PHYSICIAN, ST. MARY'S HOSPITAL; PHYSICIAN, HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE.

THE subject of these lectures has been revised and brought up to date in order to present results of my experience of the treatment of this disease during the last twelve years.

Trifacial neuralgia, chronic trigeminal neuralgia, tic douloureux, or neuralgia major of the fifth nerve, as it has been variously described, is an inveterate and violently painful paroxysmal neuralgia, affecting, in the majority of sufferers, one side of the face only. In by far the larger number of sufferers the pain is referred to the territory of the second or the third division of the fifth nerve—that is to say, roughly, the upper jaw and cheek, upper lip and side of the nose for the second division, and the lower jaw, lower lip, and perhaps the side of the tongue for the third division. In a considerable proportion of cases the second and third divisions of the nerve are both affected, and the pain will not cease, or ceases only for a time, if one of the divisions alone is treated. In a small proportion of cases the supra-orbital branch of the first division is involved, scarcely ever alone, but in addition to neuralgia affecting the second division or the second and third divisions. Supraorbital neuralgia alone is usually due to temporarily acting causes, such as influenza, malaria, or other fevers, or to such causes as errors of refraction, frontal sinusitis, migrainous neuralgia, and many others, and it must be distinguished from the chronic paroxysmal and inveterate disease known as trigeminal neuralgia. The pathology of this disease is somewhat obscure. What is certain is that there is no disease to be detected by hitherto known methods, either in the nerve centres of the brain, Gasserian ganglion, or main branches of the fifth nerve. The undoubted fact that efficient interruption of the conduction of afferent sensations along these branches of the fifth nerve gives instant relief to the neuralgia appears to me sufficient proof that such neuralgia is dependent upon stimuli affecting the nerve endings at their periphery.

The results of destruction of the ganglion as compared with neurectomies or alcohol injections below the ganglion differ only in the degree of their permanence—that is to say, operations on the nerve trunks, however complete at the time, are always followed by some re-establishment, sooner or later, of nerve conduction through downgrowth of nerve fibrils from the ganglion cells above. If, on the other hand, the ganglion is thoroughly destroyed by any means, the anaesthesia of the fifth nerve territory is permanent, and the cure of the neuralgia is correspondingly complete.

The nature of these stimuli from the periphery in this neuralgia is a matter of speculation, but it seems highly probable that they are due to septic neuritis of dental nerve filaments, the result of previous dental caries, pyorrhoea, or abscess around the roots; and recently in a case of this chronic neuralgia a piece of the maxilla was removed for me by Mr. Warwick James under the most careful aseptic precautions, and a pure growth of streptococci was obtained.

I have been impressed, in taking the histories of cases, by the number in which the pain has definitely started immediately after dental operations or antral abscess. No other nerve in the body, except the second and third divisions of the fifth nerve, is so liable to chronic infection of its branches, and although in some cases even many years have elapsed between the loss of a tooth and the onset of the neuralgia, yet this does not exclude septic neuritis from dental infection as the cause, and when the infection has thus spread backwards into the dental filaments within the jaw it is easily understandable that removal of the tooth does not cure the neuralgia; indeed, it often makes it worse.

* The substance of two lectures given for the Fellowship of Medicine at the Royal Society of Medicine (June, 1919).

Causes.

During the last twelve years I have seen a large number of cases of chronic trigeminal neuralgia, and I have analysed my records of over 312 cases, 230 in private practice and 82 hospital cases. I have, in addition, seen and operated upon a considerable number of hospital cases whose records are not available or are inadequate. Some curious points come out in my analysis which I have never seen referred to in other writings on the subject. The proportion of women affected to men is 62 per cent. to 38 per cent., or about three women to two men, while of the unilateral cases of neuralgia, which of course form a very large majority, the right side is affected in correspondingly greater frequency—namely, 62 per cent. to 38 per cent. This excess of right-sided cases over left-sided obtains in each group of men and of women, both in private cases and in hospital cases, and, moreover, in each separate year of the eleven years I have analysed a somewhat similar excess of right-sided cases over left is seen. I cannot therefore look upon this difference in frequency of incidence on the two sides as accidental; what its cause can be it is not easy to say.

I do not know whether any statistics are available of the relative frequency of dental caries on the two sides. Other factors, too, have to be taken into account which may act as the exciting cause for the origin of trigeminal neuralgia. I have already spoken of dental operations originating the pain in a certain number of cases, such as fracture of teeth and difficult stump extractions. In ten of my cases severe *chill* to the face, as by motoring in a cold wind, was the immediate precursor of the original spasms of pain; in five cases intense *emotion* immediately preceded the first attack. A woman was shocked by being told that her child, who was playing in the roadway, had been run over by a motor car and taken to the hospital. She immediately hurried off to the hospital, and on reaching there three-quarters of an hour later heard that her child was dead; at the same time a spasm of violent neuralgia struck her in the right lower jaw, the pain continuing at intervals until I saw her two years later, and was able to arrest it by injecting the third division of the fifth nerve with alcohol.

Still another cause of onset of this terrible neuralgia is a *blow* upon the jaw or face; this occurred in six of my cases. For example, a young woman, aged 27, was stooping to pick something off the floor when another girl's head struck her violently on the lower jaw, making her teeth clash and rattle, as she said. About three hours later, when she had just mounted on to the top of an omnibus, she was suddenly seized with the most excruciating pain in the face, which made her behave so wildly that she said she was like a mad woman, and had to be taken off the bus. The paroxysm lasted altogether some ten minutes, but recurred again and again in the manner characteristic of trigeminal neuralgia until I saw her and injected the third division of the nerve some years later.

Such suddenness and violence of onset of the spasms of pain are extremely characteristic of this peculiar form of neuralgia, and I have notes of some forty-six cases in which this was the case. One of apparently the most severe cases of pain I have ever seen began in this way. She was a cook, aged 45, who in her spasms of neuralgia lost all control, and screamed and threw herself about. Six years previously her first attack occurred, without any warning one night at 3 a.m., when she was awakened with the most awful agony in her face. Her screams awoke the whole household; a doctor had to be sent for, and she was kept under morphine almost continually for three weeks. She got no relief from any drugs until I injected the second and third divisions of the fifth nerve with alcohol; this gave her complete relief for two years. Recurrence and reinjection with alcohol again gave her two years' freedom from pain, when I injected her Gasserian ganglion with alcohol, since when she has been completely free for several years.

In other patients the pain may at first be mistaken for dental neuralgia, but the spasms of pain gradually increase in severity, in spite of the removal of teeth, until at last it is realized that the neuralgia is of the graver inveterate type.

Age.

The age of onset of the disease varies very widely in my experience, the oldest being 85 when the disease

commenced. In two cases, both females, the severe neuralgia began at the age of 17; one of them had suffered from neuralgia of the third division for twenty years when I saw her, temporary relief only having been obtained by a division of the inferior dental nerve. Alcohol injection of the third division ten and a half years ago gave her complete relief, which still persists. The other patient was a lady aged 70 when I saw her for the pain; she had suffered almost constantly for fifty-three years; in her case injection of the ganglion was done under chloroform two and a half years ago, causing total anaesthesia of the fifth nerve and complete relief of all pain, which should be permanent.

The onset of the neuralgia is rare under the age of 30, though I have seen eleven other cases commence before the age of 30, at the ages of 20, 21, 22, etc. The average age of onset in 205 of my cases is almost exactly 50. Once the disease has started it is practically certain that permanent cure can only be obtained by destruction of the nerve trunks involved, or of the ganglion itself. In only two instances have I known the neuralgia disappear spontaneously, after existing a number of years. One was the father of a lady whom I injected for typical neuralgia, and she told me that her father suffered from the same spasmodic pains from the age of 65 until he was 90, when the pains gradually left him, so that he was free from the neuralgia during the last twelve years of his life, for he died at the age of 103.

In a number of cases a considerable interval may elapse between the first onset of the neuralgia and its subsequent establishment. A lady had severe spasmodic pain in her left lower jaw at the age of 45, lasting for nearly two years, when it left her for thirty years, recurring severely after exposure to a cold wind when driving. After the pain had continued for nine weeks I injected the left Gasserian ganglion. I have notes of similar intervals of twenty years, seventeen years, nine years, seven years, and so on.

Heredity.

I have noticed heredity as a factor of trigeminal neuralgia in five cases. I have already referred to one patient, a lady of over 60, whose father suffered for over twenty-five years from this form of neuralgia, and then outlived it. In another instance I have treated a mother over 70 years of age, who suffered for many years with bilateral neuralgia, mostly of the third division. Injection of the nerve at the foramen ovale gives her about two years' freedom from pain. One of her daughters at the age of 36 began to suffer in a similar manner with spasmodic neuralgia of the right third division. I saw her for this soon after the pain began, and recommended drug treatment and rest; this, however, failed entirely. I did not see her for three years, the pain having continued all that time, and she told me she had been twice injected by another physician without any relief, as the nerve could not be found. I then injected the third division at the foramen ovale, causing complete anaesthesia of its distribution and immediate cessation of the pain, from which she has now been quite free for three and a half years. In my other three patients—two men and one woman—it was the mother in each case who was said to have suffered from typical trigeminal neuralgia for many years. In investigating such histories one must be careful to distinguish between migraine and the true trigeminal neuralgia.

Chill.

I have already referred to chill as being the exciting cause of the first spasms of the neuralgia in ten cases. One illustration will suffice. A woman, aged 50, drove twenty-five miles in an open dogcart through a blizzard, snow, and icy cold wind to Exeter. The same evening, about 9 o'clock, while she was having supper, intense neuralgia struck her lower jaw, the pain being on the same side as had been exposed to the wind. This was the beginning of a severe case of trigeminal neuralgia which continued for several years until I saw her. In numerous other instances exposure to a cold wind or draught will restart the paroxysms of a neuralgia which has become dormant, and, indeed, cold wind or draught may be said to be the worst enemy of these subjects of neuralgia.

Although chill has such a bad effect upon trigeminal neuralgia it is surprising that subjects of this disease have not special immunity during hot weather, and it is extremely common for patients to say that the time of year makes no difference to their pain, and it is waste of time and money to send such patients for treatment to a hot climate.

"Warnings."

I have referred to the absolutely sudden onset of the disease in numerous cases. Three of my cases have described a warning by which they recognize the imminence of a period of severe attacks. A lady, aged 64, had suffered from right lower jaw neuralgia for ten years, made worse by extraction of the teeth. Alcohol injections by Horsley gave no relief. As she says no numbness of the face was produced, the nerves were no doubt not injected. She says she has always noticed a burning sensation on the top of the head for some days before the neuralgia attacks commence. Alcohol injection, in May, 1916, of the second and third divisions relieved her pain entirely, the relief still persisting. In another case, a man whom I injected at the age of 39, with neuralgia of the left second and third divisions, seven years ago, used to get a warning, for a day or two before the neuralgia attack, of constipation and sensation of swelling in the gums.

Another patient, a lady aged 54, says she always gets a shivering sensation along the right cheek before the pain starts. She had lost all her teeth twenty-seven years before the pain began.

Character of the Pain.

The suddenness of onset of neuralgia is often likened to an electric shock; one patient thought she had bitten on to a needle, another that she had broken a tooth. Some speak of a stinging pain at the commencement. Very many describe the pain as hot, "like a lot of red hot bradawls being pushed up," "flickering," "hot," "like daggers," "like a hot knife or needles being run into the forehead." In others the pain starts with a tacking sensation or tapping, scarcely painful at first, but rapidly getting worse, until the pain "explodes along the nerve like fireworks or hot electric wires." The severity of the attacks must be witnessed to be appreciated, and patients get little sympathy or credit for their suffering, except from others who have seen them in it. Some patients lose all control of themselves in the attacks, screaming out, fighting, and struggling. In others the jaw becomes fixed, perhaps wide open, and saliva may trickle from the mouth.

One patient described the commencement of her attack as having suffered for two days with severe agony in a tooth; she thought such pain was impossible, had two teeth out, but was no better for a week; since then she has been subject to repeated attacks in which the pain stings into the right side of her tongue. She calls it a "hellish pain," and says it has destroyed her nerve, and she feels during the attacks as if she could smash everything, or commit suicide. Indeed, before the remedy was devised for this pain in the operation of gasserectomy, and later by alcohol injection of the nerve trunks, suicide was not a very uncommon ending for sufferers from this dreadful disease.

So long as patients are able to take food they do not lose weight or suffer notably in health, but as soon as the neuralgic spasms are sufficiently frequent and severe to prevent the taking of food there is danger of rapid loss of strength from starvation, and it may be necessary for the patient to suck liquid nourishment through a straw or tube on the other side of the mouth, and to write instead of speak, because the spasms of pain are started by attempts at eating and talking.

Treatment.

Only a comparatively small number of sufferers from trigeminal neuralgia get relief from drugs. In a few gelsemium gives relief, though with the majority even morphine in large doses fails. Practically the only two methods are gasserectomy and alcohol injection. In my opinion the former operation should never be undertaken until alcohol injection has been thoroughly tried. During the last ten years I have injected the Gasserian ganglion with alcohol through the foramen ovale in 63 cases; in 31 the anaesthesia has remained total and no recurrence of pain has taken place. In many of the remainder partial

ganglion anaesthesia has persisted though pressure could be felt, yet the relief from pain appears to be equally good.

In many cases, though total ganglion anaesthesia is produced at the time of injection, yet the anaesthesia of the first and second divisions wears off, perhaps completely, in from ten minutes to an hour, though the third division remains totally anaesthetic. This is no doubt due to the ganglion cells having been shocked, and not destroyed, by a partial infiltration only. In such a case pain is liable to recur after twelve months or two years, as in a case of ordinary injection of the nerve. With total destruction of the ganglion there is the same liability to keratitis as with the operation of gasserectomy, but if the lids are kept carefully closed by strapping for the first week and the conjunctival sac washed out with boracic lotion twice a day, I have found little or no trouble with my later cases. The lids, however, should be kept closed from the beginning, and it is unwise to wait and see whether keratitis develops, as then it will be necessary to keep them closed for a much longer time.

Hutchinson's partial gasserectomy avoids the danger of keratitis, but is not a certain permanent cure, as I have seen three such cases relapse with neuralgia.

Bilateral Neuralgia.

Bilateral trigeminal neuralgia is comparatively rare, though I have seen and injected 25 bilateral cases, usually at different dates, but on several occasions I have injected both sides, one after the other.

Gasserectomy is an impossible operation for bilateral cases of trigeminal neuralgia, owing to the necessary destruction of the motor branch of the fifth nerve on each side and consequent jaw-drop. Alcohol injection has the advantage that the nerve injury is less complete, and the motor nerve fibres regenerate. In one case I produced jaw-drop for two and a half months, which recovered completely later. On December 10th, 1919, I injected the left Gasserian ganglion in a woman of 49, for neuralgia of the left upper jaw, whose right Gasserian ganglion I had previously destroyed by alcohol injection seven years previously. She was still totally anaesthetic over the whole right fifth distribution, just as much as in any case of gasserectomy, though in her case the motor branch had recovered well, and she had quite good right temporal, masseter, and pterygoid muscles. Injection of the left Gasserian has now produced in her case total anaesthesia of the whole of the face and front half of her head, though she can chew fairly well by means of the muscles on the right side, and those on the left side will doubtless recover also later. So far as I know, bilateral destruction of the Gasserian ganglia has never previously been done.

Method of Injecting Alcohol.

As regards the methods of practising alcohol injection, details have already been published and need not here be repeated, though I would like to insist on the advisability of using the method of trial and test. That is to say, when the needle is thought to have struck the nerve inject a few drops of 2 per cent. novocain, and, after waiting half a minute, test the skin distribution of the nerve for anaesthesia. If none has developed do not inject alcohol, but try again to find the nerve. As soon as anaesthesia appears to novocain injection, then complete by injecting about 1 c.cm. of 90 per cent. alcohol, when total anaesthesia to touch, pin, and pressure will develop almost instantaneously if the nerve at the foramen ovale or foramen rotundum has been correctly hit.

Results.

In almost every case, as soon as anaesthesia develops from the injection, the neuralgic spasms cease, and they can no longer be started by any chewing movements or rubbing the face.

The duration of the cure rarely lasts less than twelve months, if good anaesthesia has been obtained, and in the majority the relief from pain lasts from two to three years. Very many of my cases have been quite free for four or five years, one six and a half years, another seven years, another nine years after nerve injection only, while I expect my cases of ganglion injection to be permanent cures, just as if gasserectomy had been done. No trophic effects on the skin are ever seen. Keratitis is a risk if the cornea is anaesthetic after injection of the ganglion, but this may always be avoided by proper precautions.

THE SIGNIFICANCE OF ACIDOSIS IN CERTAIN NERVOUS DISORDERS.*

BY

B. H. SHAW, M.D.,

MEDICAL SUPERINTENDENT, COUNTY MENTAL HOSPITAL, STAFFORD.

ACIDOSIS, as evidenced by the presence of acetone bodies in urine, is frequent in cases of acute delirium, confusional and stuporose states, certain melancholic conditions, and in epilepsy.

The following notes are taken from two recent deaths resulting from extreme acidosis:

1. E. J., a mischievous, weak-minded boy of impulsive tendencies, aged 15, admitted in September, 1917. He was well nourished, and took his food very well indeed. He had had no fits previously. During the night of December 30th, 1919, he had a severe typical epileptic fit, and lapsed into a condition of cerebral irritation, with paresis of his legs and conjunctival injection. Specific gravity of urine 1024; no albumin or sugar, but strongly positive to acetone. He was put on alkaline treatment and improved, the acetonuria disappearing, and he continued to take his food well. On January 10th he again developed strong acetonuria, which did not yield to alkaline treatment, and he died at 9.40 a.m. on the 16th.

Post-mortem Examination.—Intense minute injection of the pia arachnoid in a patchy fashion, especially marked over sulci and along veins, one large patch extending over the vertex of the left hemisphere; numerous puncta cruenta on section of the cerebral tissue; strong acetone reaction in cerebro-spinal fluid and blood. Microscopical examination showed minute vascular engorgement, diffuse and central chromatolysis of the neurone body, and degenerative changes in nuclei—in other words, primary degeneration of the nerve cell. The suprarenal glands showed some congestion and fat deficiency; other organs apparently normal.

2. J. H., a well developed man, aged 49, admitted on February 4th in a state of acute confusion; had been ill for six weeks prior to admission. He was, on admission, in a state of restless noisy excitement, continually wet and dirty, rendering it impossible to collect his urine for examination. He was put on milk and other extra diet, which he took satisfactorily. He was extremely feeble when admitted, became gradually weaker, and died at 2.30 a.m. on the 10th.

Post-mortem Examination.—Cadaver in good condition, marked opacity and thickening of the pia arachnoid, with much recent minute injection and patchy ecchymotic areas. Brain tissue showed numerous puncta cruenta on section. Acetone reaction strongly marked in cerebro-spinal fluid, which was in excess in pericardial fluid and in the blood. Microscopic examination showed engorgement of vessels, with some minute extravasations, diffuse and central chromatolysis of cells, nuclear changes, and absence of pigment. Suprarenal glands softened, scanty fat; liver somewhat fatty; other organs normal.

In mental cases it is the exception to find *post mortem* a normal transparent pia arachnoid. Secondly, in long-standing cases of epilepsy almost the only change met with may be a thickening and opacity or milkiness of the pia arachnoid; this thickening and opacity I regard now as most probably due to congestive attacks resulting from acid intoxication. These congested areas are most pronounced over the vertex where the membrane is thickest and the underlying neurones mainly motor.

Thirdly, after death in status epilepticus there is intense congestion of the membranes and the cells show the profound structural changes of primary degeneration—structural changes which I have shown to be also present in the cases mentioned. It is of interest to note here that the meningeal appearances in these cases are very similar to many I have seen in the Balkans as a result of malignant malaria, and in which the symptoms indicated intense toxaemia, no doubt due to deficient oxidation as a result of the destruction of vast numbers of erythrocytes and also to the haemoglobin and oxyhaemoglobin set free in the plasma behaving as weak acids. Addison, Lusk, and Graham consider that the rise in heat production in severe anaemias is due to the pathological production of lactic acid from carbohydrates in consequence of an inadequate supply of oxygen to the cells. Recently I have had two cases of confusion following malignant malaria contracted at Salonica, one of whom had definite acidosis periodically while here.

* Abstract of paper read at a Staffordshire Branch meeting of the British Medical Association, February 26th, 1920.

Notes on twelve cases were quoted, in which the acidosis was associated mostly with delirium, confusion, mild melancholia, stupor, epilepsy and masked epilepsy, and it was pointed out that in cases which recover improvement synchronized with diminishing acidosis. Haemolysis of erythrocytes by acetone bodies and bile acids simply means cellular disintegration. Taking into account the other still more destructive ferments present in acidosis, it is obvious that these substances in the blood and body fluids must have a most irritative and disastrous effect on tissue cells. This is already evidenced by the degenerative cell changes noted in the *post-mortem* examinations alluded to. If the acidosis is intense or continued for a length of time, or if the patient gets frequent recurrences, permanent damage to the neurones must ensue.

It was next pointed out that the adult human brain contained practically 2 per cent. of cholesterol, while children's brain tissue contained much less—a child 3 months old only 0.69 per cent. This substance can be shown *in vitro* to exercise a protective function on erythrocytes with regard to the action of haemolytic agents such as autolytic ferments and acids, and it is therefore suggested that the more serious cerebral effects of acidosis in young children may be traceable to this deficiency of cholesterol as compared with adults.

Referring to ferment action, it was mentioned that the diastatic content of urine in cases of acetonuria was somewhat higher than normal, and also it was pointed out that pancreatic lipase which is normally present in blood became haemolytic when activated by fat. In reference to this, serums from different types of mental disorder were investigated as regards the effect on them of tryptic digestion. The serums were drawn at the same time of day in every case, primarily for syphilitic serodiagnosis, and in the results the serum in cases of chronic alcoholism, chronic melancholia, and epilepsy, showed a higher acid content as compared with others. Charon and Briche's observation that fits are most frequent at night time, when the reaction of the blood tends most towards acidity, was confirmed. The relationship between tuberculosis and epilepsy and the influence of acidosis in favouring microbic infection was pointed out. It was suggested that Biedl's glycosuria resulting from throwing the thoracic duct out of circulation was due to the absence of a ferment derived from lymphocytes, and that the lymphocytosis present in such diseases as tuberculosis, typhoid fever, malaria, and epilepsy, is an evidence of increased ferment action and acidosis. It was pointed out that the adrenals, as well as being concerned with sugar elaboration, have antidotal properties as regards autolytic agents; in sympathetic disturbances serious interference with cell metabolism and consequent acidosis may result. Thus:

> Fright or anxiety produces hyperglycaemia; this is probably due to stimuli emanating from the brain passing over the splanchnic nerves, in part to the liver, inducing acetone formation and the splitting up of glycogen, and also to the suprarenals, causing a discharge of adrenalin. Constant action of this nature may lead to exhaustion of the adrenal tissue, with resulting loss to the organism of the protection normally afforded against agents producing cell autolysis. Further, adrenalin is *in vitro* readily precipitated by acetone, consequently the presence of acetone in the body fluids directly inhibits the action of adrenalin. . . . Degenerative suprarenal changes are very constantly met with at necropsies on the insane. In epilepsy, Prior states that out of twenty suprarenal glands examined by him degenerative changes were present in fifteen; also, in addition to adrenalin being readily precipitated by acetone in solution, its normal destruction in the blood is inhibited by any tendency towards acidosis.

The production of acid from glucose by the streptococci responsible for pyorrhoea alveolaris was referred to, and the frequency of this affection in cases of mental confusion instanced.

After reference to previous experimental work on animals, the following evidence of the toxic effects of acetone-containing urine was mentioned:

Two rabbits were taken, both bucks from the same litter and each weighing 3 lb. Into the first rabbit 2 c.cm. of urine from a patient suffering from marked acetonuria was injected intravenously, with the following result:

> In a few minutes he became drowsy and lethargic, taking no notice of food though previously feeding with avidity. Incoordination of hind legs set in and paresis; breathing, at first rapid, became appreciably slower. In half an hour he looked very ill, hunched up, fur ruffled, movement of nostrils spasmodic and slow; remained in one place; resistive to stimuli; shut eyes occasionally; half an hour later hind leg paresis had passed off, although still lethargic and disinclined to move.

Into the second rabbit the same amount of the same urine, but one-third saturated with anhydrous sodium carbonate, was injected intravenously. This injection has no apparent effect on the animal. It had previously been ascertained that 2 c.cm. of normal urine had no effect on a rabbit when injected intravenously.

Treatment.

In mild cases the indications are rest, warm clothing—in view of the fact that acidosis is nearly always associated with low blood pressure; sleep, nutritious diet—avoiding fat and including plenty of carbohydrates, bynogen, Allenbury's diet and such artificial foods; free purgation and alkaline medication. Potassium citrate is very useful, as in addition to the fact that it changes into carbonate in the blood it provides citric acid, which has the effect of restoring fat metabolism to normal, thereby reducing directly the acetonaemia. This, combined with the carbonates of calcium and lithium and the bicarbonate of soda, makes a very useful prescription. The more bases given the better. Free ventilation is necessary to secure an adequate supply of oxygen.

In a case showing more serious symptoms, complete rest in bed and, in addition to the above, enemata of 20 per cent. glucose solutions; while in a severe attack it may be necessary to give glucose or sodium bicarbonate intravenously. It might indeed be advantageous to consider gum saline intravenously, as Bayliss suggested in wound shock. Glucose, it must be recollected, may behave as a weak acid in the blood.

Unless absolutely necessary for the provision of sleep, as little drugging as possible and as little disturbance in the way of chatter and interference—the exhausted and damaged neurone has quite enough to put up with. Be firm and make the patient realize that his is a serious bodily disorder. In all but the mildest cases send the patient to hospital as soon as possible. The acetonuria having disappeared, continue a full dose of the alkali towards evening and give a mixture of iron and arsenic. The experiments of Crile show that in these conditions strychnine is contraindicated, as it caused cell changes precisely similar to those resulting from the emotions, toxins, and foreign bodies—namely, hyperchromatism succeeded by chromatolysis. With regard to means of control of the kinetic drive, Crile also states:

> Whatever the activation, whether infection, emotion, injury, or Graves's disease, morphine measurably controls the outward phenomena such as pulse rate, respiratory exchange, sweating, thirst, restlessness, acid excretion, fever, muscular action, and pain. . . .

And it is interesting to note that so far back as 1822 De Quincey, in his *Confessions*, states opium to be

> . . . under an argument undeniably plausible alleged by myself, the sole known agent, not for curing when formed but for intercepting whilst likely to be formed, the great English scourge of pulmonary consumption. . . .

He considers that he himself was cured of phthisis between the ages of 22 and 24 by the regular and continued use of opium. There is at present here a patient, at one time a confirmed epileptic, who was given, many years ago, continuous and gradually increasing doses of opium for a number of years. During this period the fits disappeared, nor have they ever returned, though for a good many years now the opium habit has been broken off.

In conclusion, attention was drawn to:

1. The profound structural alteration in the neurone caused by acidosis, and the extreme danger of permanent injury to it by continuance of the condition or by frequent attacks.
2. The urgent need of early diagnosis, and the recognition that such cases are very ill indeed, and need complete rest and proper treatment, or they may become invalids for life and a burden on the community.
3. The simplicity of the diagnosis.
4. The fact that, as a rule, acidosis can be readily counteracted by efficient treatment.

5. The need—in view of acidosis being a probable etiological factor in epileptic states—for careful investigation, and the probability that, if such is the case, efficient alkaline treatment may cure the condition if recognized at the onset of the fits. The giving of bromides would seem to be dangerous in such a state, as it only tends to dull cellular activities; later on it may be of use in treating nerve cells which have acquired vicious habits.

6. The danger to the patient in not adopting a firm attitude. If such cases are at once sent to hospital before serious mental symptoms come on there would soon be marked diminution in the admission rate at asylums.

7. The predisposition to microbic diseases afforded by acidosis, above all to tuberculosis. As regards children, there are questions which can best be answered by the general practitioner; for instance:

What is the relationship between "biliousness" in children and subsequent tuberculosis? Are the sexes equally subject to acidosis? Does it throw any light on the greater mortality of male children?

With regard to tuberculosis:

Is it a question of the optimum reaction of the medium necessary for the growth of the tubercle bacillus? In other words, do certain individuals, as a result of errors of nutrition or faulty cell metabolism, offer a more favourable pulmonary or lymphatic culture medium for the growth of the tubercle bacillus than do others?

Finally, is this whole question of acidosis, within limits, at the bottom of what we understand by heredity in respect to disease processes? Is it an effort on the part of the organism to autolyze itself? All these questions are of extraordinary interest, and the whole subject may bring us vastly nearer a proper comprehension of certain processes which up to the present have been shrouded in mystery.

THE CARE OF CRIPPLED CHILDREN.

BY

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CRIPPLED children need both treatment and education; only thus can they be restored to active citizenship, healthy-minded and, so far as may be, healthy-bodied.

In a former paper, published in the BRITISH MEDICAL JOURNAL, October 11th, 1919, attention was called to the crying need for effective treatment for crippled children, and a system of orthopaedic hospital-schools and out-patient clinics designed to carry out the work was outlined. It was estimated that about 10,000 beds would be required for the whole of England and Wales, but it was pointed out that new construction was not involved to this extent, both because in some places hospitals carrying out this work already existed, and in other places there were hospitals in use by the War Office or Ministry of Pensions which would be suitable, and could eventually be made available for this civil orthopaedic work.

Those who have studied the problem feel very strongly that provision for the treatment and all-round education of crippled children is the reverse of an extravagance, even in the present financial straits. The following figures are taken from the report on "An inquiry concerning physically defective adults and children" carried out by the City of Birmingham Education Committee in 1911. Their capacity for work was a subject specially noted, and it was found that among 1,001 cripples over the age of 16 only 111 were "able to do remunerative work at home," and 531 were "unable to do any remunerative work." Now it is the experience of those who work at hospitals for cripples that 90 per cent. can be cured or improved sufficiently to enable them to take a share in industry if the disability is tackled early and efficiently and training given.

It is true that there must be expenditure, perhaps for six months, during the active treatment of a crippled child, and that in some cases his education expenses afterwards may be high, but from the financial point of view alone it is a clear economy, for he is thus enabled to become a producer instead of a dependant for the many years that follow. Further, these crippled children are already being maintained somewhere and by somebody. Many are in workhouses, infirmaries, or industrial homes, and quite out of touch with expert treatment. A large number have to be admitted to general hospitals on account of the severity of their condition; this is especially true of cases of tuberculosis of the spine, hip, and knee—the very cases that need many months or several years of unremitting treatment in open-air wards in the country with plenty of good food. These are the children above all others for whom the hospital-school and continued supervision are needed. On all these children money is now being spent, but with very imperfect results. On the other hand, a certain number of orthopaedic hospitals, orthopaedic departments of general hospitals, and hospital-schools for crippled children are already doing most excellent work; they can only deal with a minority of the cases, yet their very existence means that so much of the capital cost has already been faced, and so much of the maintenance expense is already being found.

In some places new hospital-schools for crippled children are needed, but almost everywhere there is waste and inefficiency due to lack of the combination of education and treatment, of the fellow-working of all the forces that have hitherto worked apart, and of continuity of orthopaedic supervision. The recognition of this is neither new nor singular, as the following quotations will show.

1. *Report of the City of Birmingham Education Committee March 29th, 1912:*

> "More systematic co-operation and definite co-ordination between the local education authority and the hospital and medical charities, especially those which deal with orthopaedic cases, (are needed). In England, speaking generally, the divorce between these two organizations and their respective attitudes towards the children under their supervision is complete. The success which has attended the joint work of education and cure of cripples in America and on the Continent is in no small degree due to their close co-operation and identity of outlook."

2. *Report of Census of Cleveland, Ohio, 1916:*

> "The need does not arise from failure to recognize separately the medical and educational requirements, but the failure to co-ordinate these and other forces affecting the life of each crippled child."

On the completion of their treatment most of the children would be able to go to ordinary schools. In towns some "special schools" would be advisable, but certainly far fewer than are called for now, when many children are allowed to remain crippled needlessly. As the cases are sent in progressively earlier the reduction of the number of children too crippled to attend ordinary schools will become greater in the same degree.

For a few children, either very severely crippled or living too far from a school, a "residential school" would be needed in each district, and this should be in the same grounds as the hospital-school. On their discharge from the hospital these children would then remain under the supervision of the orthopaedic surgeon and continue to attend the school and workshops. The advantages would be many, including administrative, educational, and workshop economy, and facility of orthopaedic supervision.

The publication of the paper already mentioned brought some of those whose work lay specially in the treatment of crippled children into touch with others who had done much for their education and training. These mutual interests have combined, and the "Central Committee for the Care of Cripples" has been formed. Its purpose is to represent and help voluntary associations devoted to the welfare of cripples, and to push forward the work in every possible way. This committee has become associated with the "Central Council for Infant and Child Welfare," and has an office at 20, Berkeley Street, W.

Whenever schemes are put forward or new associations formed there is alarm amongst existing organizations, for they naturally feel anxious lest their proved work is to be set on one side. In this case probably the feeling has been—"Is some new and theoretical system of State Service to start afresh with the slate wiped clean, and then perhaps never to work with the same sympathy and enthusiasm?" That is the last thing desired. Rather is the aim to unite and help the present efforts, to combine the workers and put better tools into their hands, and to make the attainment of results easier and quicker.

There is no need for new administrative machinery. The organization of this work must be moulded so that it will fit into its place in the health work of the nation—that system composed of central government (by the State), local authority (locally elected), and the ultimate network of health and social services, official and unofficial. Of this network the hospitals form nodal points; voluntary in origin, they are becoming more and more linked up with State mechanism by the system of capitation grants for the treatment of various types of disability.

The Hospital-Schools for Crippled Children will, it is hoped, be worked in close touch with the medical officers of health in their districts, and in affiliation to the general hospitals. For the costs of maintenance each hospital-school will be largely dependent on capitation grants from the local authorities, who will pay only if they are satisfied with the work that is being done, and if the institution has been approved by the Ministry of Health and Board of Education, for with this approval 50 per cent. of the maintenance fees paid out can be recovered. In some districts several counties will be served by one hospital-school; these arrangements will be made to accord with the geographical conditions in various parts of England and Wales. On the other hand, in London and other big cities a fitting plan would be that each orthopaedic hospital, or general hospital with an orthopaedic department, should have its section of the town, and its beds for crippled children in the country. This would make towards simplicity of working, and continuity of treatment and supervision of the patients present and past throughout hospitals, special schools, and their homes.

Guidance and help from the Ministry of Health and Board of Education would be welcome, for an organization for the care of cripples, planned to give them all that they need, must at the same time be moulded to fit into its place exactly, and be linked up accurately with the existing health and education machinery, for only thus will efficiency be quickly realized and permanently maintained. It will be a small part of the whole structure, yet essential, for it is to deal with children to whom effective care alone can give lives active, happy, and self-supporting.

A Hospital-School for Crippled Children.

An attempt has been made to represent diagrammatically a hospital-school of 200 beds, with its various parts indicated and grouped on a definite plan, and an associated "residential school." The plan is intended to serve as a means of illustrating some of the many points to be thought of in planning such a hospital and as a stimulus towards further consideration of the subject. No doors or windows are indicated.

Types of Cases.

The conditions for which these hospitals are needed can quickly be grasped from such a table as that given in the article on the Cure of Cripples, in the British Medical Journal of October 11th, 1919. It is now repeated—corrected in one particular—in the next column. It will be seen that the cases are grouped into three main categories:

1. Deformities.
2. Paralyses.
3. Surgical tuberculosis and other affections of bones and joints.

Desiderata.

1. *Open Air Wards in the Country.*—Probably only those who have worked in a hospital where the children are in open air night and day can realize its marvellous effect on their vitality and powers of recovery.

2. *A site on dry subsoil*, fairly high, with southern aspect, and a low rainfall. A low local rainfall can sometimes be found in a district which as a whole has a comparatively high rainfall.

3. *A position in the neighbourhood of a main town*, with good radiating railways and roads, and if possible near enough to the town to share in the advantages of its electricity and gas and the transport, water, and drainage systems.

4. *Affiliation with a good General Hospital.*—Hospital organization is tending towards the co-ordination of the special hospitals in each neighbourhood with a "mother" general hospital. This should give many advantages—for instance, the special hospitals would share in the benefits of a first class pathological laboratory, and it should bring the spirit of team work into hospital relationships.

Table of Cases under Treatment.

	Shropshire.	Stoke.	Total.
Approximate population of area served...	425,000	246,307	671,307
Approximate proportion of cases under treatment to population	1 to 538	1 to 722	1 to 594
A. Deformities, congenital or acquired:			
Rickets	177	51	228
Deformities of the foot	71	51	122
Scoliosis	8	14	22
Congenital dislocation of hip	16	8	24
Fractures, non-union and mal-union	15	10	25
Other deformities...	43		43
Total	330	134	464
B. Paralyses:			
Infantile paralysis	211	72	283
Infantile hemiplegia	43	11	65
Spastic paraplegia		11	
Total	254	94	348
C. Surgical tuberculosis:			
Spine	55	75	230
Hip	57		
Knee	26		
Other joints, etc.	17		
Total	155	75	230
D. Other conditions:			
Osteomyelitis	33	11	44
Various	16	28	44
Total	49	39	88
Grand total	788	342	1,130

5. *Sufficient beds* to meet the demand from the area which the hospital serves. It is particularly important to avoid the results of bed pressure: (1) Undue curtailment of treatment, and (2) a heavy waiting list.

6. *A Unit of Manageable Size.*—The hospital shown is planned for 200 patients. This is recommended as the best size. Sufficiently large to justify the necessary expense of an expert staff, it is yet not too large to be dealt with effectively by a clinical team consisting of orthopaedic surgeon, assistant orthopaedic surgeon, two house-surgeons, physiotherapist, and masseuses.

7. *Administration Offices.*—Where these hospitals are to be managed by a committee, offices will be required for a secretary-accountant and his clerk or clerks; for the matron and her clerk; and for a housekeeper or steward.

8. *Construction and Design.*—The hospital as shown might well be of semi-permanent construction and of "bungalow" type. Wood should not be used externally, owing to the great cost of maintenance involved. Beside the general principle of placing all wards and living rooms on the southern side of the hospital the following points illustrated in the plan may be mentioned:

(*a*) *Ward units*—each main ward complete with its two accessory blocks.

(*b*) The concentration of departments specially concerning the surgeon (west end of centre block); the conjunction of clinical rooms of surgeon and physiotherapist (49, 50).

(*c*) The aggregation of the departments requiring heating or hot water supplies into a small number of groups. In each of the three main groups the heating plant can be situated under or close to a department requiring special heat—namely, (1) theatres in the surgical group, (2) the hydrotherapy room, and (3) the kitchen.

(*d*) The economy of service, heating, and hot water supplies obtained by the grouping together of all the dining-rooms and the resident quarters of the matron and the three medical officers.

(*e*) The advantage of locating entrance, kitchen, etc., on the northern side of the hospital, so that the southern may be clear.

(*f*) An arrangement of drive, short, but serving the principal points of supply.

(*g*) The provision of covered walks between the various buildings of as short a total length as possible, yet so arranged that nurses or children can get from any one part of the institution to any other without getting wet.

(*h*) A convenient position should be found for the nurses' quarters. This building should stand in its own garden. Each nurse should have a separate small bedroom. A reading room and a recreation and lecture room should be provided.

9. *Departments and Wards well equipped for Orthopaedic Work.*—Points that may be mentioned have regard to:

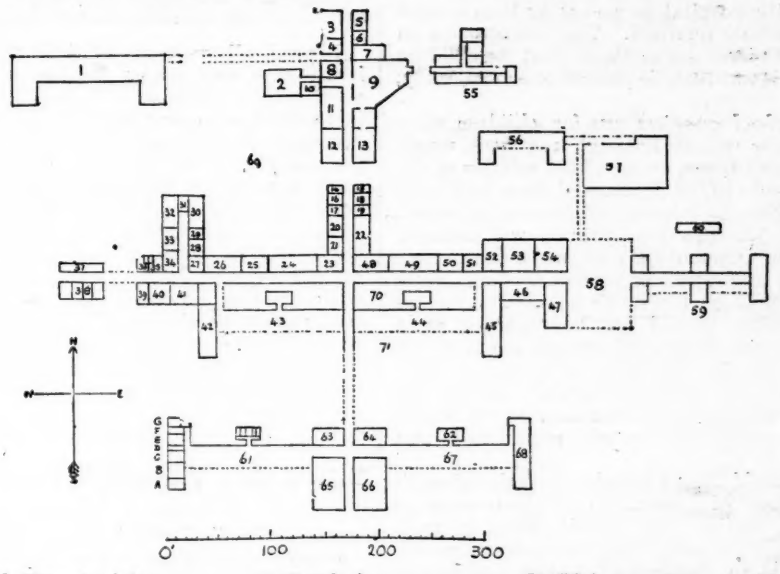
A. *Examination Room.*

This should be long, so that patients may be seen walking, warm, and with good light. There should be a waiting-room for patients. Even if the main clinical laboratory work is done at the general hospital, simple equipment for the examination of smears, etc., should be provided.

B. *Theatres.*

Two are indicated with the anaesthetic room between. Each should be complete with its whole outfit and one reserved exclusively for clean cases. There should be ample space and light. The plan does not show separate rooms for washing-up. The writer works in a theatre devised in accordance with a plan worked out by Mr. A. P. Dodds-Parker which is recommended as very simple and extremely safe. It involves merely a rather elongated theatre with one end reserved for washing-up and the sterilizing of instruments, the other for operating. The ends are partially separated by a central transverse baffle coming down from the ceiling to within 7 ft. of the floor. Fresh air is admitted to the operating area through ample inlets protected by a single layer of muslin; at the same time the steamy air is prevented from spreading into this half of the theatre (and there condensing) by the baffle and by an exhaust fan at the southern end.

A room for aspirations and minor operations in the south block is shown.



1. Nurses' quarters.
2. Matron's bungalow.
3. Kitchen offices.
4. Cooks' room.
5. Housekeeper's office.
6. Stores.
7. Larder.
8. Servants' room.
9. Kitchen.
10. Matron's dining-room.
11. Nurses' dining-room.
12. Girls' dining-room.
13. Boys' dining-room.
14. Porter's room.
15. Telephone room.
16. Matron's office.
17. Matron's clerk.
18. Secretary's office.
19. Secretary's clerk.
20. Waiting room (parents).
21. Stores.
22. Ditto.
23. Dispensary.
24. Sewing room.
25. Photography.
26. Radiology.
27. Developing.
28. Plaster casts and records.
29. Sterilizing.
30. Theatre for septic cases.
31. Anaesthetic room.
32. Theatre for clean cases.
33. Plaster.
34. Splint store.
35. Surgeon's changing room.
36. Nurses' changing room.
37. Isolation annexe and sanitary.
38. Isolation ward.
39. Mother and baby.
40. Babies.
41. Recovery ward.
42. Ward annexe.
43. Centre ward, girls.
44. Centre ward, boys.
45. Ward annexe.
46. Reading room.
47. Play room.
48. Waiting room.
49. Clinical room, surgeon and clerk.
50. Clinical room, physiotherapist.
51. Masseuses' duty room.
52. Hydrotherapy.
53. Electricity and massage.
54. Gymnasium.
55. Medical officer's quarters.
56. Residential school quarters.
57. School.
58. Covered playground.
59. Workshops.
60. Sanitary block (workshops, etc.).
61. South ward, girls.
62. Ward sanitary block.
63. Plaster.
64. Minor operations.
65 and 66. Schoolrooms.
67. South ward, boys.
68. Ward annexe.
69. Drive.
70. Asphalt or concrete area.
71. Asphalt or concrete slope. Garage, laundry, chapel not indicated.

N.B.—Pathological laboratories and an out-patient department, though not shown, will be required if the hospital is not working in touch with a general hospital.

C. *Plaster Rooms.*

Plaster-of-Paris plays a great part in the work of these hospitals. The actual treatment of cases in plaster, the preparation of casts on which to make spinal jackets or other appliances, and record casts, together necessitate good provision of plaster rooms. Two are shown in the surgical block, and a third in the south block for the treatment of the cases there.

They should be well heated and ventilated, and equipped with an Abbott's frame, a good vertical suspension frame, and a strong table with arrangements for pelvic rests, etc.

D. *The Splint and Appliance Workshops.*

These workshops are mentioned later.

E. *The Wards.*

The four main wards shown on our plan can be partitioned further if thought desirable. They face directly south, and on this side are open right up to the ceiling level, which should be about 9 ft., the place of the south wall being taken by pillars.

The beds would usually be ranged in a double row. When driving rain beats into the ward the front row of beds could be pushed back. Further protection can be given by stout canvas roller blinds which can be pulled down between each pair of pillars.

All main wards should be lit and ventilated by windows on the north side, in addition to being open to the south.

The floor of the wards should slope slightly outwards.

In these open-air wards the children need plenty of food, plenty of blankets, and, in cold weather, a supply of artificial heat. Whether hot-bottles which have to be reheated or refilled several times a day or electrically-warmed mattresses will prove more economical is not yet clear. Possibly the latter system will gain on the score of economy due to the saving of hot water, labour, and breakages; it is certainly a more efficient source of controlled and steady heat. Information on this point should soon be available from the Hayling Island annexe of Sir William Treloar's Alton Hospital.

The southern block of the hospital could be specially devoted to cases of surgical tuberculosis. Diseases of the spine and hip account for the majority of such cases in hospital and mean treatment in bed for very long periods.

Each main ward has attached to it:

1. *Ward Annexe*, containing—

A. Sister's room, 15 ft. by 9 ft., from which there is a good view of the ward.

B. Nurses' duty room, 15 ft. by 19 ft.; this is available for dressings and the massage of certain bed cases,

C. Bathing room, 15 ft. by 12 ft., with tables on which cases on frames or in plaster can be washed.

D. Ward kitchen, 15 ft. by 5 ft., with gas stove.

E. Bathroom, 15 ft. by 7 ft., with washing basins and baths.

F. Drying room, 15 ft. by 7 ft., for damp clothes or bedclothes.

G. Kit and linen store, 20 ft. by 10 ft. south, 15 ft. by 10 ft. centre.

Rooms B, C, D, and E should be fitted with hot and cold water. For B and C warmth combined with thorough ventilation is most important, for it is dangerous to take the more delicate children into a stuffy room for washing or dressing, although they remain free from bronchitis if treated continuously in the open ward. It is exceedingly difficult to keep these two rooms warm and airy without windows which can be opened on either side and open fires. Further, the nurses on duty must be remembered as well as the patients.

The projection of this annexe in front of the ward gives some shelter from cross winds, and adds to the stability of the structure.

2. *Sanitary Block*, connected to the centre of each main ward by a short cross-ventilated passage, and containing a slop sink, etc.

Wards for Isolation and Acclimatization.—The plan indicates three small wards (15 ft. by 10 ft.), with partially glazed partitions, and a nurse's room from which the wards can be overlooked. The south side of these wards consists of double doors which can be opened inwards. The wards can be used for infectious cases or for the acclimatization of specially delicate children to living in the open air. Observation of newly admitted cases in special wards is not found necessary in open-air hospitals.

Babies' Wards.—On the south side of the west end of the central block are two wards—one for babies, the other for the admission of both mother and baby when necessary; both can be completely opened to the south.

Recovery Ward.—In a children's hospital especially it is a very great advantage to have a ward set aside for the reception

of cases for the first twelve or twenty-four hours after operations. It must be most harrowing for children to watch others go through the process of "coming round" from an anaesthetic, and a most undesirable preliminary to a subsequent operation on themselves.

Adolescents and Adults.—No special wards are indicated for these. The girls and boys are in distinct sides of the hospital, so that adults could be accommodated in one end of the ordinary wards.

Paying Patients.—Similarly no wards are indicated. Small bungalows in suitable positions could be provided.

Education.

Regulations as to education in hospital-schools are laid down by the Board of Education. In this plan no design of the schoolrooms is indicated, but positions are suggested. The main school lies to the east of the site and is surrounded by the workshops, residential school quarters, covered playground, reading and play rooms. The main school block would be attended by walkers and chair cases from the central block of the hospital, as well as by the children in the residential school quarters. The schoolrooms in the centre of the south block are so placed that the children confined to bed in this ward can be pushed to school easily, bed and all.

The residential school quarters are for children who, though they no longer require hospital treatment, would get no education if sent home, owing to the relation of the degree of their disability to the distance of the school from their home. Here, again, no internal structure is indicated, but as some of the children in these quarters will probably be convalescent from tuberculous conditions, one or two open-air dormitories might well be provided. No cubicles or dormitories should be on the north side. The size of this particular building should not be regarded as a reliable guide as to the residential school needs of an area requiring a hospital of 200 beds. A group of small cottages would be an alternative method of housing the older children. The children in hospital and in residential school need reading rooms, play rooms, covered and open playgrounds.

The *Workshops* should supply training in various handicrafts. Besides those of general application, such as carpentry, cobbling, leather and basket work, in each district the local trades should be specially considered.

Splint Shop.—It is an immense gain to an orthopaedic hospital that all the splints and appliances needed in the hospital should be prepared in its own workshops. The instrument makers can then work in constant touch with the orthopaedic surgeon, and so carry out his ideas exactly. Further, in urgent cases special splints can be made immediately.

It is recommended that part of the workshops should be of the open-sided hut type, and that all should be specially well ventilated, for they will be used in the training of children in the hospital and residential school. It will sometimes be possible to give permanent work as instrument makers or instructors to children who have passed through the residential school and shown special aptitude.

Maintenance.

Complete fulfilment of the conditions laid down by the Ministry of Health and the Board of Education, which include arrangements for dental and refractive work, is necessary so that the "approval" of these departments may be obtained for work under (*a*) the Maternity and Child Welfare Act, (*b*) the Education Act (1918), and (*c*) the tuberculosis clauses of the Insurance Act.

Great benefits will be derived from close association with the medical officers of health and tuberculosis officers of the group of local authorities served by each hospital-school.

Definite working arrangements should be made with the local authorities by which the costs of maintenance, worked out to an average for each child and approved by the Board of Education, are paid on a capitation basis by the local authority concerned in accordance with the Acts mentioned above.

Expenditure.

The following is an analysis of the weekly expenditure per child at Baschurch for the quarter ending December 31st, 1919:

	£	s.	d.
Food	0	19	1
Drugs and chemicals	0	1	9
Instruments and appliances *X*-ray apparatus Boots and leather	0	4	4
Salaries	0	11	2
Repairs and renewals Buildings and machinery Hardware and crockery Furniture and bedding	0	5	0
Oil and fuel	0	2	1½
Laundry	0	1	0
Printing Stationery Postage, telegrams Rent, rates ... ... Carriage Railway fares Miscellaneous	0	2	10
Total	2	7	3½

The total weekly cost is seen to be greater than the estimate of £2 given in the paper published in October. This is due to the rise of prices, which unfortunately has not yet stopped.

Beyond all these material advantages, there is needed in the staff enthusiasm for the work, orthopaedic experience, with a balanced judgement of the values of various methods of treatment, the highest degree of skill, and well arranged clinical team work. Further, the efficacy and permanence of the work of such a hospital depends on early recognition and treatment and on thorough after-care. The use of all the health services of the district, official and voluntary, especially the work for infant and child welfare, should lead to the early discovery of crippling conditions, and avail to bring them into touch with orthopaedic treatment without delay. Similarly, each patient on discharge from hospital should be attached to one or other of the orthopaedic clinics scattered through the district. Careful after-treatment and supervision will then make for the attainment of the best result possible for every child.

THE X-RAY TREATMENT OF ACNE VULGARIS.

BY

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INTRODUCTORY.

In spite of the general advance in dermato-therapy during the last decade, it is discouraging that few of the commoner skin diseases can be permanently cured. It is now established that acne vulgaris—perhaps the most widespread minor skin ailment in this country—no matter how extensive, or in what stage it presents itself, can be permanently cured by judicious *x*-ray treatment. I am well aware that, in making this statement, I lay myself open to the retort that radiotherapy for so trivial a complaint is a dangerous and quite unjustifiable remedy. The comedo and pustular stages of the condition are, however, very objectionable, and women especially cannot afford to regard the prospect of permanent disfigurement by pitted or keloidal scars with equanimity. It is surprising to find that most of the larger textbooks incline to the opinion that *x*-ray treatment should be reserved for the most intractable cases. In these, however, irremediable cicatrization will already have occurred, and the final appearance when cure has been brought about may resemble the after-effects of small-pox or lupus. It would seem to be an axiom of therapeutics that nearly all its most effective weapons are dangerous in unskilled or injudicious hands; but no reasonable member of the profession would therefore limit the administration of salvarsan in syphilis, of emetine in dysentery, or of chloroform in the major operations of surgery. To relegate an invaluable and approved remedy to the position of a last resource because there have been disasters among the earlier cases, is to assume an attitude for which there is now no justification, and which it is the main purpose of this article to repudiate.

Pathology.

Acne vulgaris is mainly attributable to the activities of a particular microbacillus first grown by Sabouraud. Every comedo contains it in more or less pure culture, as can be proved histologically by suitable staining reagents. The acne pustule is the result of contamination of the

comedo with various other organisms, among which the staphylococcus predominates. The deep-lying acne nodules also contain the acne bacillus, but in reduced numbers; and cultivations from these, as from many other types of very chronic abscesses, are not infrequently sterile.

The acne bacillus flourishes only in the presence of sebum, and is found more or less profusely wherever sebaceous glands are situated. As it can be recovered from the normal gland, it follows that it is not necessarily pathogenic, a circumstance of which there are other instances—for example, (1) *B. coli* in the large intestine is physiological, but in an appendix abscess it is pathological; (2) Vincent's spirillum is a normal parasite in the saliva, but a dangerous factor in certain types of buccal and pharyngeal ulceration; and so with the pneumococcus, *Streptococcus faecalis*, and *Staphylococcus albus*, all facultative pathogenic organisms.

The sebaceous glands share the increased activity of all glandular structures at puberty; and it is, perhaps, to their superficial position and liability to fortuitous secondary infection that the appearance of acne at this time of life may be due. The comedo is nothing but a sebaceous gland the duct of which is choked with inspissated sebum, cellular detritus from the corneous layer, and colonies of the acne bacillus.

We are still unable to explain why this "inspissation" should occur; but, as with other secreting organs of the human body—as, for example, the appendix, gall bladder, and kidney—once it has taken place, secondary infection is only a matter of time and opportunity. Streptococci, staphylococci, the bottle bacillus, and various yeasts are frequent contaminations; and the symbiosis thus established appears to increase the proliferative and irritant characters of each. Whilst infected and blocked glands become pustules or spread deeply into the cutis and become nodular abscesses, those in the immediate neighbourhood react to the irritation by an increased output of sebum, which in its turn favours extension of the condition by the rich pabulum it provides for new generations of the causative organisms. We are thus confronted with a very simple example of a vicious circle.

The morbid histology, so far as it concerns our thesis, may be considered under three headings: (1) Involution of the comedo to a condition of normal sebaceous activity; (2) secondary infection and acute suppuration, with destruction of the sebaceous gland, and eventual scarring or pitting; (3) chronic suppuration which may result in the production of (*a*) deep nodular abscess formation, or (*b*) cicatrization, or hypertrophic and true keloidal tissue.

The structure of a comedo has already been alluded to. In addition to inspissation of sebum and cell detritus in the duct, there is usually a small round-celled infiltration about the duct and neck of the affected gland. This infiltration is excessive in the second stage, that of acute suppuration; being usually extraglandular, it explains why it is that such an abscess is difficult to express, an easy procedure in the case of a comedo. It is with the results of the third stage, the chronic suppurative condition, that our discussion is mainly concerned.

Histological sections reveal the well known cells common to all the granulomata—for example, chronic sepsis, tubercle, syphilis, etc. Fibroblasts, mast cells, giant connective tissue cells, leucocytes of various kinds, and strands of fibrous tissue are present in all such sections in varying degree—the fibrous element predominating in direct proportion to the chronicity of the lesion. The periglandular fibrosis is often exceedingly dense, a fact which may have some bearing on the frequent failure of vaccines and topical application to reach the micro-organisms in the ducts, where they lie secure, and in a state of latent or potential virulence, which only needs such factors as constipation, dyspepsia, menstruation, or the abuse of alcohol or tobacco, to call them into activity.

Treatment by X Rays.

If the preceding pathological sketch is correct in essentials, the causes of failure to cure by internal and external medication or by vaccines become apparent, and can be ascribed in the main to the presence of young connective tissue cells and their fibrous derivatives, which bar the access of all remedial agents to the seat of the disease. The action of *x* rays is selective on fibroblasts and on any unorganized and rapidly proliferating cellular structure. It is this selective affinity which is responsible for the favourable destructive effects on certain types of cancer, more especially in sarcoma, which is a connective tissue cell derivative.

Its relatively superficial position in the epidermal or subepidermal plane renders the acne lesion peculiarly accessible to the penetration and direct action of *x* rays. But the rays possess a still more valuable characteristic: they are inhibitory to the physiological action of the secreting cells of sebaceous glands—as well as sweat glands, thyroid and ovarian glands, etc. If, therefore, the fibrous capsule of the infected comedo is "dissolved," and at the same time the secretory activity of the gland itself diminished or altogether inhibited, two favourable conditions for the growth of the acne bacillus will have been removed and the vicious circle broken. Whether the explanation offered is correct or faulty is of academic importance only. The incontrovertible fact is that *x* rays will cause involution both of the comedo and the deep nodular abscess, and reduce to a minimum the still greater disfigurement already caused by hypertrophic scars and keloidal tissue.

Dose of X Rays.

The dosage of *x* rays required to effect a cure in any particular case depends in the first place on the stage of the infection. For the sake of convenience, and in conformity with the pathological data, three such stages can be clearly distinguished: (1) Comedo formation; (2) comedo and pustulation; (3) nodulation, or deep infection, with concomitant fibrotic or keloidal changes.

In stage (1) local applications of sulphur, resorcin, mercury, or salicylic acid, are almost invariably prescribed either in a lotion or in an ointment. Soft soap is frequently incorporated in the ointment base, or directed to be used antecedently in the form of a shampoo with hot water. Stock or autogenous acne and staphylococcic vaccines are administered periodically; and the results, as long as treatment is continued, are satisfactory, the comedones disappear, and the case is apparently cured. It must be admitted that in the great majority of cases, and in spite of the most punctilious attention to detail on the part of the patient, relapse is exceedingly common. I am of opinion that in some cases treated by this method the energetic friction and application of local remedies has actually favoured secondary infection with staphylococci and the development of pustules. Be that as it may, it will be generally conceded that the process is tedious and causes considerable discomfort to sensitive skins. The *x*-ray treatment of the comedo stage is entirely free from both these objections.

Method.

In stage (1), in which only mild surface action of *x* rays is required, a filter is not used. A tube of medium hardness, working at a spark gap of between four and five inches, is the best for the purpose. A visible erythema—the so-called "reaction"—should not be aimed at; nor is it necessary to produce subjective sensations of itching or heat. The dose must be controlled in every case by the change of colour of a reliable make of the Sabouraud-Noirée pastille, which should be accurately placed at a point exactly equal to half the distance between the anticathode of the tube and the surface irradiated. It is also of the utmost importance that the trajectory of the rays should make a right angle with the plane on which they fall. As the areas usually affected by acne (except in the case of the back and chest) are relatively curved, and not plane surfaces, this direction can only be approximately followed in most cases. The summit of the curve will obviously be the nearest point to the anticathode; and it follows that the measurement of the distance from the anticathode, which should not be less than 6 in., must be made from the centre of this area. For a case of uncomplicated comedo formation a dose approximating to four-fifths of the full epilation dose (or B tint) is generally sufficient to effect a marked improvement. The administration is usually given in two sessions, with an interval of five days between them. In some cases the activity of the sebaceous glands is not effectively damped down by four-fifths of the pastille, and another two-fifths* or

* I use a recent modification of Corbet's radiotintometer (made by the Cox-Cavendish Electrical Company) for accurate estimation of slight colour changes.

three-fifths of the full dose may be required. In all cases ten days must be allowed to elapse after the primary four-fifths B dose has been administered. If this precaution is rigorously adhered to there is no risk of overdosage. The appearance of an erythema is the signal for cessation of *x*-ray application to that particular area; the final effect of the treatment cannot be accurately gauged until all reaction has passed away. A cure can be anticipated in the majority of the cases in which it has occurred; for slight and invisible cutaneous atrophy, in which the sebaceous glands particularly are implicated, will ensue. It is again emphasized that the atrophy of the sebaceous gland is neither physiologically desirable nor a factor in the treatment. Inhibition of an excessive activity is all that is required to cause involution of the comedo. In every case of facial acne treated by *x* rays the eyebrows, eyelashes, and mucous membranes must be effectively protected by strips of malleable lead foil, which can be fixed *in situ* by rubber strapping.

In stage (2), when pustulation and dermatitis are marked, an effort should first be made to allay them by the application of mild antiseptic and detergent lotions of lead, calamine, or mercury oxycyanide (1 in 4,000). A few days later the areas can be treated by *x* rays. Two-fifths of the B tint can be given at intervals of ten days, and repeated as found necessary. "Erythema reaction" should be carefully avoided in the pustular stage.

While there are conceivable alternatives to radiotherapy in (1) and (2), the presence of intradermic and subdermic nodules and cold abscesses, periglandular fibrosis, and keloidal tissue (stage 3) is a direct indication for *x*-ray treatment, for by no other agency can their involution be permanently achieved. The deeper situation of all these lesions calls naturally for the use of harder or more penetrating rays. These can be obtained in two ways: either (*a*) by the use of a "hard" tube, with a spark-gap working at a distance of 5 to 6 in., or by (*b*) interposing a screen of sheet aluminium, which cuts out the soft erythema-producing rays altogether. The filter should have a thickness of 0.5 mm., and with this in position a full pastille dose (tint B) may be given at the first session without risk. (The pastille holder must be used on the proximal side of the screen.) Considerable improvement will usually be noticed in ten days or a fortnight, and filtered half-pastille doses may be repeated at this interval until involution is complete. The use of a filter will prevent or delay the development of erythema reaction, and in most cases a satisfactory result will have been obtained before this develops.

Local relapse after efficient treatment by *x* rays has, in my experience, rarely occurred. A case I treated in 1913 will suffice to illustrate the contention. The patient, an unmarried lady of 26, had suffered from the deep nodular variety with recurrent suppuration and hypertrophic cicatrization for many years in spite of vaccine treatment, local applications, ultra-violet rays, and yearly visits to a sulphur spa. The case was undertaken with considerable trepidation, as at that time my experience was not extensive. During the seven years which have since elapsed there has been no recurrence, nor is there now the slightest suggestion of cutaneous atrophy, although, as a result of treatment, the patient developed temporary erythema at the time.

X-ray Stigmata.

The ill effects produced by overdosage of *x* rays are well known, and may be either permanent or temporary.

An *x*-ray burn is a serious disability; it can be caused only by massive or repeated and uncontrolled doses of *x* rays. In the most intractable cases painful ulcers may develop. More usually there is parchment-like atrophy of the skin, pigmentation, and minute vascular stigmata (telangiectases), with permanent, partial, or total destruction of hair follicles. Such appearances are still occasionally the result of inaccurate dosage in epilation treatment for tinea of the scalp and chronic sycosis barbae, and more excusably after massive doses for lupus vulgaris and epithelioma. Modern refinements, however, have rendered the accident relatively uncommon, even in cases in which massive doses are essential. If the rules insisted on for acne cases are rigorously followed such accidents will not occur in the treatment of this disease. It is therefore with the results of mild irradiation only that we are concerned. These are temporary, as a rule, and consist, as far as evident at all, of disturbances in the physiological distribution of pigment. As might be expected, blonde individuals are more susceptible in this respect than dark, and these should always be warned in advance of the possibility of the temporary appearance of "freckles" as a result of the *x* rays. In no case do they result in anything approaching the acne nodule or pustule in degree of disfigurement, and in a few weeks they vanish. The only treatment called for is the occasional application of calamine lotion, which is also useful in cases which develop erythema reaction. Grease in any form is never well tolerated, and ointments should therefore not be prescribed for patients undergoing radiotherapy.

Conclusions.

1. Acne vulgaris in its early stages can be relieved by vaccines and the application of lotions and ointments containing sulphur, resorcin, or mercury.
2. As far as the author knows, cure can only be attained by the judicious application of *x* rays.
3. The nodular and keloidal varieties of the disease are not amenable to relief or cure by any other method.
4. Relapse after apparent cure by *x* rays is rare. Should it arise it can be dealt with by further irradiation.
5. There are no permanent contraindications to the treatment by *x* rays.
6. Temporary cosmetic stigmata are sometimes met with, especially in blonde subjects; but permanent disfigurement of any kind is the result of faulty technique.

TREATMENT OF SLEEPING SICKNESS BY SALVARSANIZED SERUM.

BY

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The history of the treatment of sleeping sickness in the past has been one of optimistic hopes resulting in failure, as each new method tried has been found to be nearly the cure, yet to have just fallen short of success. This applies more especially to African patients, for while certain Europeans and Asiatics have been undoubtedly cured of the disease, no such success has followed the treatment of natives. The reason may be that the African native is seldom seen in the very early stages, and being also more susceptible to the poisonous effects of the arsenic preparations used, is unable to stand the large doses employed to kill the trypanosome in the cases of non-natives.

For nearly a year after its introduction atoxyl was hailed as a definite remedy, only to prove not quite successful, while more recently Drs. Rodhain and Broden in the Congo have shown that salvarsan produces great improvement in early cases, although they do not claim it to be a cure, and definitely state that it is of little value if the trypanosome can be found in the cerebro-spinal fluid (Manson).

Quite early in the disease the trypanosome appears to gain an impregnable position in the central nervous system, and when attacked by drugs which drive it from the blood stream, remains undefeated in the spinal cord, in the same way as syphilis, which in the early stages is easily cured, but once it has established itself in the central nervous system complete cure is more problematical.

It would appear therefore that if sleeping sickness is to be cured, except in the earliest stages, the trypanosome must be attacked in the spinal cord, as well as in the blood stream. With this idea I commenced treating cases by intraspinal injections of neo-kharsivan; unfortunately the first case so treated died as a result of the injection.

Case 1.—W., a man aged about 40 years, was examined on September 26th, 1918. The glands were small, but typical. Trypanosomes were present in the gland juice. An intravenous injection of 0.6 gram neo-kharsivan was given on September 27th, and on October 1st an intraspinal injection of 0.025 gram neo-kharsivan, after 10 c.cm. of cerebro-spinal fluid had been drawn off. The patient died on the following day.

Though doubtless this method will not necessarily cause death, I decided to employ neo-kharsivanized serum for future injections into the spinal cord instead of the drug itself.

The patients treated were divided roughly into five classes according to the stage of the disease, as follows:

CLASS A.—Early cases with distinct glands, the juice of which contains scanty trypanosomes, but with no other signs. The patients consider themselves quite well, and are only discovered by systematic examination of a large number of natives.

CLASS AB.—The glands are well marked and contain numerous trypanosomes. The patients do not feel well, and complain of pains and sleeplessness.

CLASS B.—In addition to above signs there are finger and tongue tremors, increased knee-jerks, headache, and pain in the limbs. Impotent.

CLASS BB.—Advanced cases, unintelligent, spastic, and uncertain gait.

CLASS C.—Almost comatose. Unable to walk or reply to questions.

With this classification it is suggested that the central nervous system has been invaded in the AB class, though it is possible that this may occur even earlier.

Method.

1. An intravenous injection of neo-kharsivan is given, and after one to two hours 10 c.cm. to 40 c.cm. of blood are drawn off from a vein into a sterile vessel.
2. The vessel containing the blood is kept cool by being placed in a beaker of cold water for from twelve to sixteen hours, by which time the clear serum has separated from the blood clot.
3. A lumbar puncture is performed, and 15 c.cm. to 20 c.cm. of cerebro-spinal fluid drawn off, and a corresponding quantity of the serum, obtained as above, slowly injected into the spinal cord through the lumbar puncture needle by means of a large all-glass syringe.

This method has been used in a series of 12 selected cases, with the results tabulated below. Several patients have only been observed a short time since the treatment; the longest period of observation has been sixteen months.

While no absolutely definite results can be looked for till several years have elapsed after the patient has been treated, it must be borne in mind that these cases have only had one injection of the serum and were then sent back to their homes without further treatment of any kind, except in one case, No. 9, to whom two injections of serum were given.

Two cases are recorded in detail, and the others are shown in the table.

Case 2.—A woman, aged about 30, Class AB, was examined on September 9th, 1918. There was a large typical chain of glands in the neck and trypanosomes were present in the gland juice. On October 1st an intravenous injection of 0.6 gram of neo-kharsivan was given; 2 oz. of blood were drawn off after three hours. Twenty minims of serum were injected into the spinal cord next day. On December 14th, 1918, the glands at re-examination were found to be few and pea-like. One cubic centimetre of the patient's blood was injected into a monkey, which on December 24th escaped and was not recaptured. On the 30th the glands were as before and another monkey was inoculated. On February 8th, 1919, this animal was well; as I left the station on tour it was not seen again, but I understand it remained perfectly well until it escaped some time later. The patient was re-examined on May 29th and September 2nd, 1919, when she was quite well and the glands were very small. A monkey inoculated on the latter date was quite well at three subsequent examinations (the last on January 7th, 1920). The patient was last seen on November 29th, 1919, when she was quite well; two pea-like glands were present, the juice of which contained no trypanosomes.

Case 4.—A woman, aged 27, Class AB, had one large soft gland in the neck on January 9th, 1919; trypanosomes were present in the juice. On January 10th, 1919, 0.6 gram of neo-kharsivan was injected into a vein, 40 c.cm. of blood being drawn off. Intraspinal injection of 20 c.cm. of serum was performed next day. At her next examination, on September 2nd, 1919, no glands were palpable, and inoculation of 2 c.cm. of blood was made into a sheep, which was found quite well on October 30th, 1919, and January 7th, 1920. At subsequent re-examinations on November 12th, 1919, and January 7th, 1920, the patient was well and her glands were not palpable.

Note.—This woman disappeared during the severe famine in the early part of 1919, and was not seen for nearly nine months.

These two cases had only one injection and no other treatment. After sixteen and twelve months respectively they show no signs of relapse, declare themselves to be perfectly well, and are certainly in better health than when they first came under treatment.

Table showing Twelve Cases Treated.

No. of Case.	Sex.	Class.	Dose of Serum.	Months since Treatment.	Result.
2	F.	A B	20 min.	16	Well.
3	M.	A	3 c.cm.	1	Disappeared.
4	F.	A B	20 c.cm.	12	Well.
5	F.	A B	8 c.cm.	1	Died (cause unknown).
7	M.	B	15 c.cm.	6	Well.
8	F.	B	15 c.cm.	4	Well.
9	M.	C	20 c.cm.	1½	Died.
10	M.	B B	15 c.cm.	2½	Improved.
11	M.	B	21 c.cm.	1½	Well.
12	F.	A B	7 c.cm.	1½	Well.
13	F.	B	20 c.cm.	1½	Well.
15	F.	A B	24 c.cm.	1½	Well.

Of the cases quoted above, Case 3 showed no signs of relapse when last seen, but he was lost trace of during the famine, and is said to have died of hunger and dysentery in April or May.

Case 5 was treated on July 11th, 1919, and showed considerable improvement. She died suddenly on August 18th, 1919, from some unknown cause. I did not see her as I was away on tour, but I understand that she was well and working on the cultivation in the morning, but was found dead in her hut next day. There appears to be no reason to suppose that her death was due either to sleeping sickness or to the serum injection.

Case 9 was very advanced; on admission he could not give his name and was unable to walk, and could only stand with difficulty. This patient was a man, aged about 22, Class C; he was examined on September 25th, 1919. A very large chain of typical glands was found on both sides of the neck, and the gland juice contained numerous trypanosomes. Trypanosomes were also found in the blood but not in the cerebro-spinal fluid. Next day 0.6 gram of neo-kharsivan were injected intravenously. On the 27th an intraspinal injection was made of 20 c.cm. of serum, and on the 29th he appeared better. On October 12th he was much improved and more intelligent; the glands were harder and smaller and their juice contained no trypanosomes. The same observation was made two days later. On October 16th 0.6 gram of neo-kharsivan were given; this was repeated on November 1st, on which date no trypanosomes were found in either the blood or the gland juice. Next day 22 c.cm. of serum were injected intraspinally, and no trypanosomes were found in the cerebro-spinal fluid, of which 3 c.cm. were injected into a dog. The patient died on November 3rd; on January 7th, 1920, the dog was well.

It appears quite possible that this man died from the effects of treatment, but at the same time the disease was so far advanced that even supposing the trypanosomes in his system had been killed their effect prior to treatment might still have caused death. It is interesting to note that there was no rise in temperature above normal after the first injection.

In order to confirm the experiments of Drs. Rodhain and Broden, as well as the one or two similar cases which have occurred in Uganda, I quote the following cases to show that the improvement noted in the patients tabulated above is not due to the injections of neo-kharsivan alone:

Case 6.—A large dog was brought to me suffering from keratitis, and on examination its blood was found to be swarming with trypanosomes of the *gambiense-brucei* type (Duke). On July 11th, 1919, it received an intravenous injection of 0.3 gram of neo-kharsivan; on the 13th it was much improved, the eye symptoms being better and the dog eating well. On the 22nd the trypanosomes returned to the blood, and on August 1st the animal was very ill, and refused all food; 0.4 gram of arsenophenylglycin was given intravenously, and three days afterwards no trypanosomes could be found in the blood. They returned, however, on the 14th, and on the 26th the animal, which was blind and refused food, was shot.

Case 7.—M., a man of about 30, Class B, had a few small glands with trypanosomes in the juice when first examined on June 1st, 1919. He disappeared for a month, but when he returned similar findings were observed (July 1st). On the 10th, 0.6 gram of neo-kharsivan was injected intravenously, but no serum was given. On the 27th the glands were small and hard, and trypanosomes could not be found in the juice; 20 minims of cerebro-spinal fluid, containing no trypanosomes, were withdrawn by lumbar puncture on September 29th, and injected into a monkey. On October 25th the patient was greatly improved, and stated he could do work of which he was not previously capable. All glands but one (very small and hard) had disappeared. The monkey was quite well. Three days later trypanosomes were found after prolonged search in the

centrifuged deposit from the man's cerebro-spinal fluid, 3 c.cm. of which were injected into a sheep. Next day 0.6 gram of neo-kharsivan was injected intravenously, and 15 c.cm. of serum were given intraspinally. On January 7th, 1920, the patient, the monkey, and the sheep were found to be quite well.

In these cases the patients made undoubted progress under neo-kharsivan alone, but in neither case was the disease cured.

The fact that the cerebro-spinal fluid in Case 7 showed no trypanosomes on first examination, and that both the sub-inoculated animals remain well, I am unable to explain except as due to faulty technique.

In conclusion, I would suggest that these experiments tend to show:

1. That intra-spinal medication causes improvement in the patient, and may prove to be a complete cure.
2. That it has a greater beneficial effect than intravenous injections alone.
3. That in advanced cases, even if the actual disease is arrested, the damage already done to the central nervous system is probably beyond repair.

I wish to express my thanks to Dr. C. A. Wiggins, Principal Medical Officer, Uganda Protectorate, for permission to publish these notes.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF ENCEPHALITIS: LETHARGY AND MYOCLONUS.

A STEEL dresser in a shipyard was admitted to the Royal Victoria Hospital, Belfast, under the care of Dr. William Calwell, on April 26th.

He had been a soldier for eleven years (one year in Africa, no illness; six years in India, enteric; four years in France, influenza, 1916). On April 2nd he felt ill, complaining of headache and double vision and pain and stiffness of the neck and right shoulder; the following day his right eyelid dropped and he developed a double internal squint. About a week later the muscles of the neck and right side of the face were twitching.

He was admitted in a drowsy condition; temperature 99.4°, pulse 84, systolic blood pressure 130; urine, heart, and lungs normal. He lay indifferent to his surroundings, and would only answer questions if vigorously roused, when he was, however, quite intelligent, though slow of cerebration. When the stimulus of the raised voice was withdrawn he sank back into lethargy. Although lethargic he did not sleep at night.

There were striking myoclonic movements of the face and neck; the twitchings, rhythmical, at the rate of 60 a minute, involved the levator anguli oris, the masseter, the temporalis, the sterno-mastoid, and the upper part of the trapezius of the left side. The diaphragm was not involved. The sphincters were normal; the knee-jerks were brisk; there was no ankle clonus; the abdominal and epigastric reflexes were absent. The pupils responded to light, but not to accommodation. There was ptosis of the right eyelid (N.3), double internal strabismus (N.6), and inability to close the left eyelid (N.7). The discs were normal.

The cerebro-spinal fluid was clear under pressure, and the cell count under 10. The Wassermann reaction, blood and cerebro-spinal fluid, was negative.

On May 14th the patient's condition was unchanged except that there was a slight decrease in the lethargy and abatement of the ocular symptoms.

The case is therefore hybrid between lethargic and myoclonic encephalitis. It conforms to the lethargic syndrome with the dominant exception of the myoclonus.

JAMES CAMAC, M.B., B.Ch.,
Royal Victoria Hospital, Belfast. House-Physician.

A BUST has recently been erected by the Faculty of Medicine and Pharmacy of Lille to commemorate Joseph Willot, a Roubaix chemist, who by the publication of a journal known as *L'Oiseau de France* did much to keep up the courage of the population of Northern France during the German occupation, and subsequently died during imprisonment in Germany.

Reports of Societies.

TREATMENT OF TUBERCULOSIS.

AT a meeting of the Medico-Chirurgical Society of Edinburgh, held on May 5th, with Emeritus Professor F. M. CAIRD in the chair, Professor Sir ROBERT PHILIP opened a discussion on the treatment of tuberculosis. He showed how the Hippocratic conception of the disease was a terminal phenomenon, and explained the modern outlook on the subject by which all efforts were directed to the early recognition of bacillary infection. He outlined the essential facts as to invasion of the organism, tissue reaction and systemic intoxication, drawing an analogy between tuberculosis and syphilis. He urged a broad outlook in dealing with a general disease with local manifestations. In the past too much had been made of the local phenomena in the various organs without taking sufficient notice of the systemic disturbances, these latter being very frequently in advance of the local signs. The value of the various special diagnostic tests was briefly reviewed. He then dealt with the advances that had been made in the recognition of the tractability of the disease if taken in hand sufficiently early and sufficiently firmly. He urged strongly the importance of keeping the patient under surveillance once the disease had been definitely determined. Tuberculosis took a long time to come and a long time to go, even with the best results. Once the patient was tuberculinized there was always the risk of further spread in acute or chronic form. So-called "fresh outbreaks" were simply caused by further spread in an already infected individual. He showed from the Registrar-General's returns the very steady decline in the mortality, although there was an increase in the cases coming for diagnosis and advice. He also reminded his audience how the age of death had gradually been postponed, as shown by the mortality tables. Finally, he urged the need for continuous intensive observations, both clinical and experimental, with a fuller training of men on the modern lines. There was ample reason for sound optimism.

Sir HENRY J. GAUVAIN dealt with the conservative as opposed to the radical treatment of non-pulmonary tuberculosis. He pointed out that tuberculosis was a general disease with local manifestations, and the aim of conservative treatment was to make use of every means in our power to assist in the formation of Nature's fibrous barriers. Conservative treatment was not to be confounded with convalescent treatment. He considered his lines of treatment under four main headings:

1. General treatment, which included (*a*) climate; (*b*) hygiene; (*c*) occupation, on which he laid considerable stress, and told how he had five educational establishments at Alton, beginning with a nursery school and going on in stages to continuation classes for cripples; (*d*) dietetic; (*e*) specific, including drugs.
2. Local treatment. This included orthopaedic and other measures designed to secure local rest and prevention and correction of deformity. He explained the vital importance of minute attention to detail in carrying out these procedures.
3. Adjuvant methods of treatment, including (*a*) heliotherapy, which was used by gradual increasing exposure to the sun—he found those who did not take on pigment readily did badly; (*b*) *x* rays; (*c*) vaccine-therapy; (*d*) chemio-therapy; and (*e*) surgery.
4. Treatment of complications. He gave in detail the gradual change which had taken place in our views as to the treatment of tuberculous abscesses.

Finally, figures were given to show the results obtained by the conservative method as practised at Alton, and he explained how a considerable length of time was required to attain satisfactory results.

Professor GULLAND, in thanking Sir Robert Philip and Sir Henry Gauvain, mentioned the importance of the time factor and good will of the patient in treatment.

Mr. JOHN FRASER, from his study of the pathology of bone and joint tuberculosis, declared himself a strong believer in conservative methods of treatment, but urged that certain conditions made operation necessary—namely, (1) social conditions, (2) age of the patient, (3) in bone tubercle, when the disease was near a joint, removal of disease would save the joint.

Dr. IAN STRUTHERS STEWART spoke of sanatorium difficulties. He found the question of occupation of his patients of vital importance, as the tendency to staleness

was great. His experience of pigmentation in heliotherapy agreed with Sir Henry Gauvain's. He considered there had been no definite general advance in sanatorium treatment during the last twenty years, and thought the cause was due to a failure to develop sufficiently broad lines of research.

Sir DAVID WALLACE confined his remarks to renal tuberculosis, and classified such cases into three groups—namely, (1) early cases with renal symptoms but no cystitis, (2) cases with vesical symptoms and no special renal symptoms, (3) cases showing a palpable tumour, with no urinary symptoms because of total destruction of the kidney. He quoted cases showing the value of removal of the affected organ, and so removing the source of infection and toxaemia; this also had the result of diminishing bladder symptoms. He urged on his audience the necessity of excluding or verifying tuberculosis as a cause of any chronic cystitis. Tuberculin he considered of some value, but general lines of treatment were, in his opinion, much more valuable.

Dr. LOGAN TURNER gave a series of statistics showing the frequency of tuberculous disease in nasal and laryngeal regions; there was a large excess percentage of lupus in the female. He considered enforced silence and general treatment the essential factors in treatment.

Dr. FERGUS HEWAT spoke of D.A.H. as at times a symptom of latent or undiscovered tuberculosis, and quoted a case in which tubercle bacilli were found in the sputum on the twenty-eighth consecutive examination. He urged a more careful consideration of toxaemic symptoms.

Dr. W. G. SYM referred to cases of pseudo-glioma and prolonged inflammation of the ciliary body. He was not satisfied that tuberculin was of much avail in the latter type of cases. His experience of children with chronic infected corneæ—not blindness—was that they took in consequence a lower place in the world. He noted, however, that even three days in the ward made a vast difference to them, but economic conditions of the present day were against these children.

Dr. CHALMERS WATSON spoke of the importance of secondary infections in tuberculosis, and urged that a more complete investigation should be made along these lines. He also referred to latent tuberculosis in childhood.

Dr. GEORGE MACKAY referred to a paper he had published in the BRITISH MEDICAL JOURNAL of October 19th, 1912, in relation to tuberculosis in ophthalmic work. He thought the value of tuberculin was enhanced by the addition of a vaccine from a secondary infection organism—for example, staphylococci. He referred to tuberculous deposits as a cause of ocular paresis.

Mr. CATHCART spoke of the conservative treatment of chronic abscesses, and referred to Lister's method of treatment in such cases. Mr. Cathcart obtained good results from the use of iodoform emulsion.

The CHAIRMAN referred to the length of time required for treatment, the importance of rest and fixation, and considered the site of the disease was an important factor in determining operative or conservative treatment. He had had good results by operation in advanced cases, as he found the removal of advanced disease assisted the natural tendency to recovery. He said some of his results had been most surprising.

RUPTURE OF CAESAREAN SECTION SCAR.

(Concluded from 674.)

AT the afternoon session of the conjoint meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine and the North of England and Midland Obstetrical and Gynaecological Societies,* Mr. CHRISTOPHER MARTIN presiding, Dr. EARDLEY HOLLAND read in abstract a paper on "Rupture of the Caesarean section scar in subsequent pregnancy or labour," and this was followed by statistical reports from various hospitals. Dr. Holland said that he supposed no accident in the whole of obstetrics was so disturbing to the surgeon as the one which formed the subject of his paper. It had seemed desirable to him to get at the truth of the matter by a series of investigations in which various hospital staffs and others had willingly co-operated. This investigation had been an unqualified success.

* The first part of the report appeared in the BRITISH MEDICAL JOURNAL of May 15th, p. 672.

In the first part of his paper he reported 5 new cases; in the second part he reviewed the literature and entered into a general discussion of the etiology of ruptured scar; and in the third part he compressed the results of his follow-up inquiry. The cases of ruptured scar after the classical operation which he had been able to find in literature in the shape of the original report numbered 92; two-thirds of these had occurred between 1910 and the present time, corresponding with the period during which the indication for the operation had been very much extended.

He touched upon the anatomy of the completely healed scar, thin scar, and ruptured scar. There was no doubt that perfect healing led to complete muscular regeneration, with the result that under the microscope not a trace of scar tissue could be seen. The essential point in all the badly united scars was failure of the muscle fibres. During pregnancy the scar became thin, and ultimately might come to consist of peritoneum outside and decidua inside, and between the two a layer of thin fibrous tissue. As to the frequency of rupture, no information had hitherto been available. There was a tradition in obstetric literature that rupture occurred in 2 per cent. of cases after Caesarean section, but that tradition could be traced to its source and there was no truth in it. Dr. Holland then gave the results of the collective investigation.

Some twenty-four hospitals and private obstetricians had contributed, and the totals were as follows:

Caesarean sections	1,582
Followed up	1,089
No subsequent pregnancy...	610
Subsequent pregnancy	479
Delivered by natural passages	70
Repeated Caesarean section	326
Abortions	42
Pregnant now	91
Ruptured scar	18

An investigation was also made as to the suture material employed, and it was found that this was catgut in 713 cases and silk in 293.

The Glasgow Royal Maternity Hospital, for example, had been able to trace the subsequent obstetric history of 94 patients. Of these, 40 patients had not since become pregnant; 54 patients had become pregnant since operation, and 8 of them had conceived for a second time. There had thus been an opportunity of investigating the strength of the scar in 62 pregnancies. In 7 cases the pregnancy was not sufficiently far advanced to produce an appreciable strain on the scar. Of the remaining 55 cases, 2 patients were at present bearing the strain of eight months' gestation; 39 were delivered by abdominal Caesarean section after the onset of labour, and 7 similarly delivered before labour had set in; 3 cases terminated by normal labour, 1 by a breech labour, 1 as a forceps delivery, and 2 as craniotomies. In this series of 55 scars one rupture was to be recorded, one scar was on the point of rupture, and one dangerously thin. The conclusions from this one hospital report were that there was relative sterility following Caesarean section to the extent of 42.6 per cent., that abortion was relatively uncommon, only occurring in 5.3 per cent., that liability to rupture was present in 5.5 per cent., and that rupture actually occurred in 1.8 per cent.

Professor MUNRO KERR (Glasgow) discussed the subject under the following heads:

1. The evidence that the uterine scar in conservative Caesarean section was often unsatisfactory.
2. The reasons why the uterine scar was so often defective.
3. The means by which a better scar could be secured with an ordinary longitudinal incision.
4. An alternative incision which he considered preferable to the old longitudinal incision.

He believed that the scar was unsatisfactory because of the difficulty of securing complete asepsis; the autolysis which occurred in the uterine muscle fibres, during involution; the great difficulty in adjusting accurately the edges of the wound; the state of unrest of the uterus subsequent to operation; the difficulty of complete haemostasis; the spongy and friable condition of the tissues on the placental site when this was on the anterior wall of the uterus. He believed that a better scar would be secured if the patients could be properly prepared for the operation beforehand, and that the risk of infection would be less if the placenta were expressed through the vagina instead of being brought out through the uterine wound. He advocated suture in layers; personally he employed catgut for the deepest layers, linen thread or fine silk for the bulk of the muscle tissue, and catgut for the peritoneal surface. He thought it important to suture the uterus whilst it was in a state of retraction, not of contraction. He suggested an alternative incision—namely, a transverse incision in the lower uterine segment, and gave details of the procedure. The advantages he claimed for it were: (1) The comparatively slight bleeding incurred; (2) the uterine wall

was here thin and the edges of the wound therefore more easily adjusted; (3) this area of the uterine wall was at rest during the earlier days of the puerperium; (4) owing to the fact that the lower uterine segment was not fully stretched until labour was well advanced, the risk in subsequent pregnancies and labours was less than with the ordinary incision.

Dr. J. D. BARRIS said the subject under discussion was a vital one. If it could be proved that the scar was liable to rupture they must modify their attitude with regard to the classical conservative operation. The cases had been collected at St. Bartholomew's Hospital so as to include all those recorded up to July, 1919. The results were:

Total number of Caesarean sections (excluding sterilized cases), 81.
Number of cases traced, 48 (59 per cent.).
Number of cases in whom no subsequent pregnancy occurred, 20 (41 per cent.).
Number of cases who subsequently became pregnant, 28 (59 per cent.).
Results of pregnancies: Delivery by natural passages, 4; by repeated Caesarean section, 21; abortion, 1; non-pregnant, 1; rupture of scar, 0.
The method of suture employed was a buried interrupted silkworm gut. Caesarean section had been performed several times upon the same patient without untoward result.

He pointed out that the common factors in the 18 cases of rupture reported by Dr. Holland were the use of catgut in 15 cases and sepsis which occurred in about half. He considered there was justification for preferring the classical operation.

Dr. L. G. PHILLIPS said that, excluding sterilized and fatal cases, sixty Caesarean sections had been performed since 1912 at the Middlesex Hospital.

Of these 60 cases, 39 had remained sterile and 21 had subsequently become pregnant, of whom 14 had had repeated sections, 3 had had subsequent natural labours, 2 had had miscarriages, and 1 was pregnant at the present time. There had been 1 case of rupture of the scar. With regard to the condition of the scar in repeated sections, 4 cases had had three and 11 cases had had two repeated sections, making in all nineteen repeated sections. In 1 case only was the scar seen as a thin line; in the other 18 cases the scar was invisible and impalpable, and healing was apparently perfect.

An interesting feature was the anterior placental implantation in every case of repeated sections, though in the first sections the placenta was often posterior, and it had been maintained that implantation on the scar was harmful, through the trophoblastic action of the placenta or the liability to retro-placental haemorrhage. Dr. Phillips suggested that the reverse might be true, for a thick placenta might act as an internal splint to the scar, and tend to prevent thinning of the scar region in labour. Moreover, the uterine musculature of the scar region because of its apposition with the placenta would not be subjected to the same muscular strain in labour as the rest of the uterus. If this were not so, uterine retractions and contractions would lead to premature separation of the placenta, which was not common.

Of the 60 cases, 39 had remained sterile for from two to seven years, mostly three years or over, and, excluding cases where precautions had been taken, the percentage still worked out at 52. There was no indication that pyrexia in the puerperium was a causative factor, for 68.4 per cent. of the sterile cases had afebrile puerperium, while 27 per cent. of those subsequently pregnant had pyrexia in the puerperium. Age and parity appeared to have no influence, as half of the sterile cases were primiparae in the twenties. The frequency of recurring pregnancies with repeated Caesarean section indicated that the operation itself was not to blame; latent gonorrhoeal infection might play a part. Perhaps this sterility and delayed pregnancy represented Nature's attempt to allow time for consolidation of the scar.

Dr. AMAND ROUTH said that when, in 1910, he collected 1,282 cases of Caesarean section performed by over 100 obstetricians and gynaecologists then living, beginning with a Caesarean section performed by Dr. Lloyd Roberts in 1867, the risk of repeated Caesarean section in anticipated cases was briefly discussed, more particularly from the point of view of whether sterilization of the patient was justifiable or desirable.

In 1910 the mortality of Caesarean section for contracted pelvis in clean cases was under 3 per cent., and the risk of repeated Caesarean section in anticipated cases was even less, but fourteen out of the 100 operators advised sterilization to avoid the danger of rupture of the scar in subsequent pregnancies. In this century "not sterilized" operations had increased considerably, leading to more subsequent pregnancies and repeated Caesarean sections. Of 669 "not sterilized" cases of Caesarean section for contracted pelvis 112 cases had become pregnant. Of these 112 pregnancies 108 ended in repeated Caesarean sections (some more than once), and three had a subsequent rupture through the scar, a percentage of 2.6.

Dr. Routh thought, however, that there must have been many pregnancies and probably some more ruptures amongst the 354 "not sterilized" cases included in the last three and a half years of his series. To encourage perfect union, if the position of the placenta could be determined or surmised, the incision should be made elsewhere, especially in "unclean" cases. It seemed clear that transverse fundal incisions were not advisable, partly because the placenta often spread on to the fundus. Caesarean section should be performed at full term or at the earliest indication of labour, so as to secure perfect uterine retraction. Intrauterine sepsis was doubtless a cause of imperfect union of the incised muscles, especially if the incision had been made through the placental site. Sepsis, even with suppuration of the wound, did not necessarily prevent further pregnancies or repeated Caesarean section. As to sutures, in 1910 catgut was used for both deep and superficial sutures by twenty-seven operators, whilst forty-one used silk and eight silkworm gut.

Dr. CARLTON OLDFIELD said that he had been able to follow up 39 out of 41 cases operated upon by himself. Twenty-one had had no further pregnancies; this fact he believed was due mainly to dread of a subsequent operation. Nineteen had afterwards become pregnant; 3 were delivered through the natural passages; 11 had Caesarean section performed twice, and 1 three times.

Dr. HERBERT SPENCER, after expressing appreciation of the valuable papers by Dr. Holland and Professor Munro Kerr, regretted that the work had not been carried out on the same scale and general plan as that adopted by Dr. Routh. It was a pity that the series was not made continuous with Dr. Routh's, and that the cases in which the first operation was performed before 1912 were excluded. He (Dr. Spencer) had performed 66 Caesarean sections and 13 repeated Caesarean sections, and had never met with a case of ruptured scar; it ought not to occur in an aseptic case properly sutured. He regarded adhesions in an aseptic case as due to faulty technique.

Dr. BLAIR BELL held that failure of the uterine scar to heal firmly was due to sepsis. He believed that in the most definitely "suspect" cases an afebrile puerperium could be obtained by sterilization of the uterus and vagina with hypochlorite solution. A large gauze pack, saturated with this solution, undiluted, should be left in the uterus protruding through the cervix into the vagina, and removed when the patient had been put back to bed. The question of technique, however, was important. He preferred to make the incision as high up as possible in the uterus. He had operated in the way described by Professor Munro Kerr. This situation, however, might be unsuitable owing to the presence of a large venous plexus running across the utero-vesical pouch. For the closure of the wound he preferred mattress sutures of chromic catgut for the deeper part of the uterine muscle, the same stitch being carried over to bring together the superficial part of the muscle of the peritoneum.

Dr. FOTHERGILL said that investigations conducted by American obstetricians in recent years led to the conclusion that in the absence of obstruction, and when the recovery from the previous Caesarean section had been afebrile, the patient under skilled observation might be left to deliver herself. He thought the present discussion did not warrant any advance from this position. Too much stress seemed to have been laid upon the suture material. He had had equally good results with silk and various kinds of catgut, and now sewed up with anything the nurse gave him. Adhesions were avoided by making the abdominal incisions high up, so that when the uterus was emptied and sewn up, the two incisions should not lie opposite one another. He had always avoided cutting into the lower uterine segment owing to the proximity of the vagina and bladder, and because of the large venous structures around it; before adopting the procedure advocated by Dr. Munro Kerr he would like to have the results of a few hundred cases.

The discussion was continued by Dr. GOUGH, Dr. FLETCHER SHAW, Dr. BRIDE, Dr. CLIFFORD WHITE, and Dr. LAPTHORNE SMITH.

In reply, Dr. EARDLEY HOLLAND said that the most important point revealed in this collective investigation was the danger of catgut, and he hoped that those who used this material would renounce this dangerous practice. Professor MUNRO KERR said that time only would show which incision gave the soundest cicatrix. Perhaps in five or ten years' time he would be convinced that the incision in the lower uterine segment did not possess the advantages he now believed it to have. He was at present a little uncertain whether infection in the wound would be more likely to occur with this incision than with the classical longitudinal one.

ANNUAL OPHTHALMOLOGICAL CONGRESS.

THE annual congress of the Ophthalmological Society of the United Kingdom was held from April 29th to May 1st at the house of the Royal Society of Medicine, London. The president, Mr. J. B. STORY, of Belfast, in his opening address, of which an abstract was printed last week at p. 671, dealt with the position of ophthalmology in the curriculum of the medical student and in the final examinations.

The first morning of the meeting was devoted to the reading of papers. Amongst these were papers by Mr. Usher on "Enlarged cornea in fish with indications for the cause of the overgrowth"; a companion paper by Mr. Treacher Collins on "Megalo-cornea and micro-cornea." A paper by Mr. John Rowan, entitled, "Are not some cases of glaucoma better treated without operation, and, if so, what are the indications?" gave rise to a keen discussion, which showed that there is much room for critical observation of the progress of chronic glaucoma and the advisability of operating, and of the results of the various modes of operating. Other papers were read by Mr. Harrison Butler on "Infection after operations for cataract," by Mr. G. H. Pooley on "Abnormalities of the lacrymal apparatus," by Mr. Harvey Goldsmith on "Double traumatic dislocation of the lens," and by Mr. G. F. Alexander on "Operation for cataract and for squint."

In the afternoon a clinical meeting was held at the Royal London Ophthalmic Hospital (Moorfields), the features of which were an exhibition of "artificial daylight" and a most interesting archaeological disquisition on the neighbourhood of old Moorfields by Mr. Percy Flemming, illustrated with lantern slides and maps.

Friday morning was occupied by a discussion on "Diabetes in relation to diseases of the eye," opened by Sir Archibald Garrod and Mr. Foster Moore, followed by Dr. Leyton, Mr. G. Mackay, Dr. Poynton, Mr. P. H. Adams, Dr. Cammidge, Mr. Gray Clegg, Dr. C. O. Hawthorne, and others. The most striking point arising from the various papers was the difference in view of the ophthalmic surgeon and the physician. To the former the association of eye diseases with diabetes was a fairly frequent finding. To the physician, with his much greater number of cases of the general disease under observation, the connexion was a comparatively rare one.

The evening of the day was taken up by the reading of papers: Mr. H. M. Traquair on "Anatomically separate anterior commissure at the chiasma in a case of pituitary tumour with acromegaly"; Dr. Gordon Holmes on "Tumours involving the optic nerves and chiasma"; Mr. M. L. Hine on "Primary epithelioma of the ciliary body"; Mr. Ernest Clarke, "A further note on the accommodation of the eye"; Mr. Humphrey Neame, "Cysts of the retina"; Mr. William Wallace, "A glyptic method for the representation of certain conditions of the fundus in disease."

Saturday morning was occupied by a visit to St. Margaret's Hospital, Kentish Town, which has recently been established by the Metropolitan Asylums Board for the reception of infants infected with ophthalmia neonatorum and their mothers. A discussion on "The prevention and treatment of ophthalmia neonatorum" was opened by Dr. Gibbon FitzGibbon, Master of the Rotunda Hospital, and Mr. M. S. Mayou. A number of members of the Congress took part in the discussion.

Reviews.

MEDICAL ENTOMOLOGY.

THE first edition of Colonel ALCOCK's *Entomology for Medical Officers*[1] was published in 1911, and immediately established its position as an excellent introduction to the entomological borderland of medicine. A second edition has now appeared; it has been written and illustrated anew, but its aim has not been altered. Colonel Alcock has been guided by his experience as lecturer on entomology, etc., at the London School of Tropical Medicine, but the easy style in which it is written shows that he understands how much the usefulness of a book dealing even with a technical subject can be increased by attention to literary form. It is aptly said that ever since the days when Aaron stretched forth his rod and smote the land of Egypt with lice and flies Arthropoda have had an evil reputation as the source of some of the sharpest and readiest scourges of mankind. "A series of discoveries brilliantly initiated by Manson in 1879" have replaced vague surmise by precise knowledge, and the object of the handbook is to outline the range of the activities of the Arthropoda in the domain of human pathology, as parasites, as agents in spreading infection, and as aggressively or defensively venomous. This object is well fulfilled, and though many pages of the book are necessarily filled with details, the author does not hesitate when occasion offers to discuss the general principles of administration and to express his own opinion. As an illustration we may refer to what is said on p. 191 with regard to schemes for dealing with the tsetse flies. The sweeping extermination of wild animals upon which these flies naturally feed is declared to be not only insecure in its particular foundations, but "almost impious in its disregard of all the lessons of Nature." "We ought," the author writes, "now to have learned that though, after long experience and by gradual reconstruction of his whole environment, man may subdue organic Nature, yet any isolated blind strokes that merely 'deal damnation round the land' will not be overlooked by Nemesis." The book is addressed to medical officers whose circumstances or inclination take them to hot countries, but from the manner of its composition it will appeal to many others, who will find in the introduction to the book and to the several chapters much matter of absorbing interest.

THE ORTHOPAEDIC TREATMENT OF GUNSHOT INJURIES.

ORTHOPAEDICS is perhaps the branch of surgery which has received the biggest impetus as the outcome of the war. Civilian surgery is certain to benefit proportionately, for there can be no doubt that many surgeons have had their thoughts turned to the possibilities of orthopaedics in conditions hitherto regarded as outside their province, and have realized as never before the need for preventive surgery in deformities. It is therefore very proper that surgeons to whom the opportunities for orthopaedic work came should bring their opinions and experiences before their colleagues.

Dr. MAYER's book, *The Orthopedic Treatment of Gunshot Injuries*,[2] is in no wise a treatise on the subject. He claims only that it is an attempt to help those (in the words of his dedication) striving to aid the cause of the crippled soldier, by presenting principles and rules of guidance that have been of value to himself. It is divided into two parts, according to the stage of treatment: at the front, and at the base hospital. Naturally, the second is the important one now.

In the treatment of bone injuries the author lays stress on the advantage of powerful extension, preferably with "bone-tongs" and heavy weights, on the prevention of joint stiffness in prolonged immobilization (pictures and description of mobilizing the knee while extension of the femur is maintained are shown), and on bone implantation in non-union of fractures. The operative skill demanded

[1] *Entomology for Medical Officers.* By A. Alcock, C.I.E., M.B., LL.D., F.R.S. Second edition, revised. London: Gurney and Jackson. 1920. (Demy 8vo, pp. xv+380; 197 figures. 18s. net.)

[2] *The Orthopedic Treatment of Gunshot Injuries.* By Leo. Mayer, A.M., M.D., Instructor in Orthopedic Surgery, New York Post-Graduate Medical School and Hospital. Philadelphia and London: W. B. Saunders Co. 1918. (Post 8vo, pp. 250; 184 figures. 12s. net.)

for implanting bone grafts is very considerable, and no surgeon should attempt these procedures without possessing practical ability as well as theoretical knowledge of the best kind of graft, its object and its fate. The author in this chapter goes a little out of his way to describe experiments, illustrated with some very beautiful pictures, to controvert the Macewen theory of the function of the periosteum.

In the chapter on treatment of nerve injuries the various methods of suturing nerve ends and bridging gaps are mentioned with sufficient detail to guide the reader. The author is exceedingly open-minded on the whole question and frankly says that "in nerve suture no one dare speak with authority." While not unmindful of the great value of posturing and transplanting methods, he claims sufficient success in a few cases for nerve grafting to justify its use. One cannot avoid comparing the conclusion of Sir Robert Jones on the matter, that only end-to-end suture, however brought about, should be attempted.

The best chapters in the book are the two last, dealing with tendon operations and the treatment of the amputated. Mayer argues strongly for a more thorough knowledge of the intimate anatomy of tendons and their sheath relations. Minute details are given for most of the commonly employed transplantations; as these are the result of the author's experience, they will be found of great value to the surgeon. The secret of a non-adhesive transplantation is to follow Biesalski's suggestion and draw the transplanted tendon through the sheath of the paralysed one. In the treatment of the amputated, personal sympathy and tactful encouragement play a great part, for here is a social as well as a surgical question. These qualities are plainly the possession of Dr. Meyer to a marked degree, for this whole section is most happily written and beautifully and plentifully illustrated. Indeed we would be glad if the public could have their eyes and minds opened through such a chapter to the possibilities of usefulness and pleasure in the lives of the maimed with practised management of artificial limbs.

We have sufficiently indicated the scope of this very commendable book; it is a valuable contribution to war surgical literature, and will amply repay the surgeon who looks to it for help and guidance.

GYNAECOLOGICAL SURGERY.

THE appearance of the second edition of BERKELEY and BONNEY'S *Gynaecological Surgery*[8] has been delayed for several years by the claims of the war upon the time of the writers. In the eight years that have elapsed since its first publication, however, gynaecological surgery has made several advances, and this new volume was needed. The text of the original has been revised and in many parts rewritten, and some hundred new figures have been added, which, we are particularly glad to note, retain the simplicity of those of the first edition and are each content to demonstrate one point. Only too often are figures of operations obscured by an attempt to illustrate two or more steps at once—a false economy.

The section on the plastic surgery of the vagina has been rewritten, and that on the treatment of displacements has been strengthened quite legitimately by the inclusion of a chapter on the normal supports of the genital canal, and on the various factors involved in different forms of displacement. Although more strictly pertaining to a textbook of gynaecology, this is so obviously and closely related to the selection of the proper method of operating in different cases that there will be no cavil at its inclusion in this book. Both the section in which myomectomy is discussed and that on radical abdominal hysterectomy for cancer of the cervix have been brought up to date in the light of the authors' further experience. The latter is a most interesting record, of which they may well be proud, though never satisfied. The discussion of the place and risks of this operation is still the best short consideration of the subject familiar to us.

A description of abdomino-perineal excision of the rectum has been included, in view of the possibility of gynaecologists having to deal with a carcinoma of the rectum or pelvic colon which has been mistaken for a tumour of the uterus or its appendages.

In every respect this book reflects the very highest credit upon its authors, and it will long continue to rank as the standard guide to gynaecological operative methods in this country and in the British Empire.

[8] *A Textbook of Gynaecological Surgery.* By Comyns Berkeley, M.D., F.R.C.P., and Victor Bonney, M.S., M.D., F.R.C.S. Second edition. London: Cassell and Co., Ltd. 1920. (Med. 8vo, pp. xii + 829; 489 figures, 16 coloured plates. 42s. net.)

NOTES ON BOOKS.

A CORDIAL welcome is assured to the fifth edition of Dr. FERGUSON'S handy little *Aids to the Mathematics of Hygiene*.[4] Anyone who has had to struggle with the formulae, etc., encountered in the course of preparation for any D.P.H. examination will find here all the help he needs clearly and concisely set forth. This work has been thoroughly revised, and the new method of recording barometrical observations is introduced, and also an estimation of the calorific values of foods. Examples and illustrations taken from papers set by the various examining bodies are included, and will prove a valuable guide to candidates preparing for such examinations. Considerable service is rendered by the author in thus collecting and explaining with admirable clearness and brevity the many formulae and mathematical processes employed in public health work, too often found scattered at large throughout the textbooks and lightly dismissed as presenting no difficulties to the advanced student, who may, however, have ceased to have any facility in mathematics.

No better book than Dr. BARDSWELL'S *Advice to Consumptives*[5] could be offered to convalescent patients with pulmonary tuberculosis in this country. Beginning with a short account of the disease itself, it goes on with chapters devoted to such subjects as fresh air, food, rest and exercise, occupation, emigration, and the like. It gives plenty of sound and sensible advice; perhaps its most useful section is that dealing with emigration to various parts of Africa, North America, and Australia, in which the general advantages and limitations imposed by nature and humanity on the emigrant are discussed at length and with much special knowledge. The book is well written, and may be warmly commended.

The small book on the *Change of Life: its Difficulties and Dangers*,[6] by Mrs. SCHARLIEB, M.D., is a practical guide that should be of great use to women confronted with the problems with which it deals, and may be warmly recommended to the attention of middle-aged laywomen. A more ambitious work, dealing with the same subject for the most part, but also touching on other analogous problems that have to be solved by men and women of other ages, is Mr. GALLICHAN'S *The Critical Age of Woman*.[7] Both volumes contain a quantity of common-sense instruction and advice.

[4] *Aids to the Mathematics of Hygiene.* Fifth edition. By R. Bruce Ferguson, M.A., M.D., B.C.Cantab., D.P.H.Eng. London: Baillière, Tindall, and Cox. 1919. (Fcap. 8vo, pp. xii + 186. 3s. 6d. net.)

[5] *Advice to Consumptives. Home Treatment, After-Care, and Prevention.* By Noel Dean Bardswell, M.V.O., M.D., F.R.C.P. Second edition. London: A. and C. Black, Ltd. 1920. (Cr. 8vo, pp. xvi + 153. 3s 6d. net.)

[6] *Change of Life: its Difficulties and Dangers.* By Dr. Mary Scharlieb. London: The Scientific Press, Ltd. 1919. ($3\frac{3}{4} \times 5\frac{1}{4}$, pp. 126. 1s. 3d. net.)

[7] *The Critical Age of Woman.* By Walter M. Gallichan. London: T. Werner Laurie, Ltd. 1920. (Cr. 8vo, pp. 160. 6s. net.)

APPLIANCES AND PREPARATIONS.

Sedimenting Cell for Microscopical Examination of Cerebro-spinal and other Fluids.

DR. FRANK C. EVE (Hull) has devised a mechanical cell, shown in the accompanying illustrations, to render it possible to scrutinize every bacillus contained in a column of cerebro-spinal fluid 1 cm. in depth. A cover-glass (not too fragile) is placed at the bottom of the cell, which is then filled to the brim with cerebro-spinal fluid. If tuberculous meningitis is suspected the fluid must be fresh, because a fine clot may quickly form in that disease. After an hour or two the cells and cocci will have sunk through the 1 cm. of fluid and will be lying on the cover-glass. The supernatant fluid is got rid of without disturbing them or the clot by gently unscrewing the milled head. This causes the floor of the cell to rise, creating a vacuum beneath it. Hence, provided the screw is airtight (a trace of vaseline on the thread ensures this), the fluid must retire through the little channels provided into the well below the cell. This leaves the cover-glass free of fluid. A few more turns of the screw and the cell becomes detached from the base. The cell is placed in front of the

fire and its wall will drop by its own weight, leaving the cover-glass on a little altar of brass, where it quickly dries. The ordinary routine is then followed of fixing by gentle heat in a flame and then briefly in absolute alcohol. In staining no heat should be applied to the stains, lest some cells be washed off. In collecting the fluid the first blood-stained portion should be rejected. If the cerebro-spinal pressure exceeds 12 in. by my cerebro-spinal manometer (Messrs. Allen and Hanburys), meningitis, or tumour, or abscess is almost certainly present. If a *quantitative* measure of the number of cells is required a one-sixth objective is used, a Thoma-Zeiss counting chamber placed beneath it, and the tube of the microscope moved till the circular field coincides in breadth with four of the smallest squares—that is, 4/20 mm. Then the area of the microscope field will be $\pi \times 2/20 \times 2/20$—that is, 3/100 square millimetre, and the volume of fluid will be 3/10 cubic millimetre, which originally contained the cells now visible in each field of the microscope.

Half scale.

Section.

Even if the cells are not counted, by the regular use of this apparatus a quantitative impression of the number of cells is obtained and they are quite evenly spread. In tuberculous meningitis a spider-web clot often forms which entangles the tubercle bacilli, and any one who has tried knows that when an attempt is made to spread out this clot thinly it inevitably ravels into a tangled mass which cannot be scrutinized microscopically. If this apparatus be used, a tubercle bacillus cannot hide. If the whole of a cover-glass 1 cm. square was systematically searched with a mechanical stage, the report, instead of the usual "No T.B.s present," would read: "Absence of tubercle bacilli can be guaranteed in the thousand cubic millimetres of fluid searched." If the cerebro-spinal fluid looks turbid to the naked eye, it will need dilution before using the instrument. For microscoping urines this apparatus is better than the centrifuge if two hours' delay does not matter. Messrs. Allen and Hanburys supply the instrument as here described; also the earlier model shown at the Neurological Society, the design and action of which is more self-evident. My thanks are due to my engineering friend, Mr. F. M. C. Lewis, for the excellent design.

Nujol.

A sample of nujol, made by the Standard Oil Company, New Jersey, U.S.A., has been examined; it is found to be a pure liquid paraffin, having a specific gravity of 0.883 at 15.5° C., and complying with all the requirements of the *British Pharmacopoeia*, 1914, for liquid paraffin.

THE LISTER INSIITUTE.

THE Report of the Governing Body presented to the annual general meeting of the Lister Institute of Preventive Medicine, Chelsea, on May 12th, showed that in many directions the Institute was resuming its civil work, which had been interrupted by the war. Upwards of thirty original papers have been published during the year from the laboratories of the Institute. The output of scientific work would no doubt have been still greater but for three circumstances: first, the diminished regular staff, especially in the bacteriological department; secondly, the various readjustments necessary; and thirdly and chiefly, the scarcity of research workers. For the five years of the war the supply of young men suitably trained and willing to devote a few years to medical research work was seriously curtailed, and those who have worked in the Institute have gone there rather to learn methods of investigation than to engage in research. In this way the Institute has given much useful post-graduate instruction, particularly to Colonial officers who have served in the war, but the actual return for this labour is not yet. Amongst the subjects investigated were the following:

Rickettsia Bodies in Trench Fever and Typhus.

Dr. Arkwright and Mr. Bacot have continued their observations on the small micro-organisms found in the intestines and faeces of lice some time after feeding upon a patient suffering from trench fever; the organisms conformed to the description given by Ricketts of those found by him in ticks fed upon Rocky Mountain fever and by Ricketts and Wilder in lice fed upon typhus patients. Mr. Bacot has confirmed the opinion that in the case of trench fever the Rickettsia bodies do not occur in lice unless they have had a meal of blood from a patient suffering from the disease. In eight to twelve days after the meal, the time varying with the temperature at which the lice are kept but falling within the period at which the lice are known to become infective, immense numbers of the bodies are found in the stomach, but not in sections of any other part of the insect. Dr. Ledingham, on his return from war service, was invited to assist the War Office Trench Fever Committee, and gave attention chiefly to the transmissibility of the virus to laboratory animals; some indications that this occurred were obtained, but actual proof was not reached. In the course of his work Dr. Ledingham established the fact that the Rickettsia bodies are agglutinated in a manner similar to bacteria in general by the serums of immunized animals. The reaction would be of great assistance in further studies should opportunity occur. Trench fever, however, has virtually disappeared, but Mr. Bacot has gone to Poland to make use of the knowledge acquired about trench fever in an investigation into the etiology of typhus fever under the auspices of the League of Red Cross Societies.

Bacterial Variation.

Dr. Arkwright has also been studying problems in bacterial variation, and has found that cultures of dysentery bacilli, and probably other organisms of the great coli-typhoid group which agglutinate quite uniformly with the respective immune serum when tested in the mass, may as the result of examination of individual colonies be found to consist of two types of organisms, the one reacting like the parent mass, the other possessing little or no serological affinity. This observation will have to be reckoned with in connexion with modern attempts to classify bacteria on serological grounds.

Accessory Food Factors.

Much of the work in the department of biochemistry was a continuation of the programme of experiments on accessory food factors. Reasons have been found for supposing that rickets and xerophthalmia in children and osteomalacia in adults may be due to deficiency of the "fat-soluble A" factor in the diet. Experiments with the fat-soluble factor have hitherto been rendered somewhat indecisive owing to the necessity of administering it with the fat in which it occurs. Dr. Zilva proposes to avoid this source of uncertainty by employing an alcoholic extract of green leaves and carrot, both of which contain the factor in considerable amount. Endeavours are also being made to isolate the active principles responsible for the actions of both the fat-soluble and the antiscorbutic substance. An estimate has been made of the antiscorbutic requirements of the monkey, and it has been found that that animal requires the same absolute amount of orange juice to prevent the onset of scurvy as the guinea-pig, an animal about one-eighth its weight; the time of onset of the disease is, however, very different, being about three weeks in the guinea-pig and two months in the monkey. It is added that clinical experience as to the amount of orange juice that must be administered daily to a child to obviate scurvy, when the diet is otherwise devoid of antiscorbutic power, tends to show that the requirements of the human organism in this respect are probably much nearer to those of the monkey than those of the guinea-pig. Dr. Robison has found that orange juice can be reduced to a dry residue by rapid evaporation at a low temperature without suffering appreciable loss of its antiscorbutic power, and that the residue still contains a considerable degree of potency after storage for two years in the dry condition. It is considered that the preparation on a commercial scale of dried fruit juices of high antiscorbutic power is quite practicable. Dr. Zilva is making some experiments to test the general belief that a deficiency of diet renders the subject more liable to disease; animals are being kept on diets deficient in definite constituents and their susceptibility tested by their capacity to produce agglutinins and other antibodies in response to immunization, as well as by direct infection.

Diseases due to deficiency of accessory food factors have been studied also in the Department of Experimental

Pathology. Experiments have been made to ascertain the amount of antiscorbutic substance in various foodstuffs; they have involved hundreds of observations, each extending from three to six months; the results are expressed in the following table, in which the average value of one gram of lemon juice is taken as 100:

Fresh lemon juice	100	Carrot juice	7
Fresh orange juice	100	Beet juice	7
Fresh cabbage juice ...	100	Potato, boiled 30 mins. ...	7
Ripe onion	100	Tamarind	7
Fresh swede juice	60	Coccum	7
Fresh turnip juice	60	Mango	7
Green French beans, uncooked	30	Grape juice	5
Germinated peas	30	Fresh cow's milk ...	1 to 1.5
		Dried cow's milk	less than 0.5

The influence of heating and drying was tested in the same way in the case of cabbage, fresh juices, and milk. The drying of vegetables even at a low temperature reduced their antiscorbutic value to 10 per cent. or less of the original. The factor is much more stable in acid fruit juices. It will be noticed from the table that dried milk was found to possess less than half the antiscorbutic value of fresh milk; a monkey on a maximum diet of dried milk developed acute scurvy, and was cured by the same quantity of fresh milk—a result of obvious import for infant feeding.

An experiment on the etiology of pellagra was made by Dr. Harriette Chick and Miss Hume. Monkeys were fed on a diet complete in every respect, save that the protein, which was derived from maize, was not of good biologic value. All the animals gradually lost in weight and became very weak. One of them developed cutaneous lesions strikingly like those of pellagra in the human subject, and two others patches of dermatitis of the same nature. The loss of weight was stayed by the daily addition of tryptophane and diamino acids, but otherwise no improvement was noticed. In the case with the severe skin lesions a dramatic cure was brought about directly casein was added to the diet.

Antitoxic Serums.

Experiments to ascertain whether antitoxic serum saturated with sodium chloride would prove sufficiently stable to be used as a standard antitoxin have given encouraging results. Diphtheria and tetanus antitoxins so treated have retained their original potency during twelve months, and proved as stable as the standard serums sent out by the Hygienic Laboratory, U.S. Public Health Service, Washington. Samples of the brined serums have been sent to that laboratory with a request that they may be compared with the standard serums. Brined antidysentery serum is being studied from the same point of view, and the possibility of using the method for vaccines is also being tested. Large quantities of various antitoxins and serums were supplied to the military and naval authorities during the year ending March 31st, 1920, and over one million and a half cubic centimetres of influenza vaccine have been supplied to the Ministry of Health.

Antivariolous Vaccine.

Some progress has been made in the study of the cultivation and identification of the specific organism of vaccinia. The experiments indicate that that organism can be propagated, although when cultivated under artificial conditions it ceases to be capable of producing its specific effect. Observations showing that certain animal products are specially congenial to the virus will encourage further research in this direction. The bulk of the antivariolous lymph produced is supplied to Crown colonies, mostly to tropical Africa. The satisfactory reports received from medical officers in Africa prove that the Institute has been successful in producing a vaccine which, even after transport and retention in a tropical climate, retains sufficient potency for successful vaccination.

Research Hospital.

Last year the members of the Institute decided that its constitution should be extended so as to make it possible to establish and maintain a residential hospital. The legal advisers were not satisfied that the resolution then adopted was correctly drawn; consequently at the meeting on May 12th a resolution embodying the principle in terms drafted by the lawyers was presented and adopted by the annual meeting and by an extraordinary general meeting. It will be submitted to a second extraordinary general meeting on May 26th. In taking this step the Institute is following the precedent of the Pasteur Institute in Paris and the Rockefeller Institute in New York. The progress of medical research has proved that the divorce of the laboratory from clinical work is disadvantageous. The ordinary funds of the Institute cannot be used for the establishment of a hospital, but a site is available, and we do not doubt that the appeal which the Institute will issue for a special fund will be generously supported.

VOLUNTARY HOSPITALS:

RESULTS OF A PRELIMINARY SURVEY.

BY

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LAST week a summary of the principal results of the survey recently carried out by the Joint Council of the British Red Cross Society and the Order of St. John was published in the BRITISH MEDICAL JOURNAL. It will, I believe, be interesting to the medical profession to set out some of these results again and to point to some of the conclusions which may be drawn from them. The object of the survey was to obtain some indications, first, of the volume of work done by the hospitals during the year 1919, and secondly, of their present financial position. The voluntary hospitals in London were not included in the survey, but 550 hospitals (approximately 78 per cent. of the voluntary civil hospitals) throughout England and Wales were included. The hospitals dealt with included: (*a*) 82 general hospitals of 100 beds or over, providing together 15,958 beds; (*b*) 87 hospitals of 30 to 100 beds, providing 4,724 beds; (*c*) 240 small or cottage hospitals, providing 3,355 beds; and (*d*) 98 special hospitals, providing 5,784 beds. The special hospitals included twelve maternity hospitals.

SUMMARY OF RESULTS.

A. *Volume of Work Done.*

Of the 550 hospitals reviewed—
507 hospitals have 29,821 available beds.
498 hospitals treated 359,459 in-patients during the year.
376 hospitals treated 1,600,869 out-patients during the year.
226 hospitals with 23,621 beds had a daily average occupation of 18,705.36 beds—79 per cent.
374 hospitals show 219,196 surgical operations during the year.
68 hospitals give figures showing the nature of cases treated—namely:
Medical cases ... 7,034 = 21 per cent. of total.
Surgical cases ... 26,466 = 79 „ „

B. *Financial Position.*

543 hospitals show ordinary income...		£2,835,269
543 hospitals show ordinary expenditure		£3,310,896
Excess of expenditure over income		£475,627

Some Details of Ordinary Income.

316 hospitals show as workmen's contributions, direct or through Saturday Fund	£451,426
464 hospitals show as patients' contributions ...	£214,570
248 hospitals show as public services (for example, War Office, Pensions Ministry, Borough or County Councils)	£517,890
512 hospitals show as interest from investments ...	£423,044
The total from these four sources ... ... (56.67 per cent. of ordinary income).	£1,606,930

Of these 543 hospital accounts analysed—
419 hospitals show invested capital amounting to ... £9,585,855
Yielding annual interest £340,529
65 hospitals show £33,705 as annual interest, but show no capital.
28 hospitals show no capital or interest.

Depreciation of Invested Funds.

9 hospitals show invested capital amounting to ...	£306,956
Market value at end of 1919	£248 199
Depreciation in value	£58,757

This last item is given in answer to a criticism that the hospitals in their present financial difficulty should realize some of their capital. Some few hospitals have actually been obliged to take this course, but only very few. The figures indicate that the hospitals cannot afford to unload their stock in the present state of the market.

Owing to differences in the manner of recording their results it has not been found possible to make an estimate of the average annual cost of each occupied bed, nor of the average length of stay in hospital of each in-patient. The figures from 296 hospitals show that 79 per cent. of

the beds were occupied daily; the difference (21 per cent.) of beds not in actual occupation daily is not high. It will be noted that returns from 374 hospitals show that over 200,000 surgical operations were performed during the year. An examination of the returns of 68 hospitals shows that the medical cases constitute 21 per cent. and surgical cases 79 per cent. of the total. While admitting that medical cases on the average remain probably twice as long, yet this ratio appears to indicate that medical cases are gradually being squeezed out of the hospitals. This conclusion is supported by remarks made in the annual report of several hospitals. Looking at the figures in a general way, and making an allowance for hospitals not included in the survey, it would appear that the voluntary hospitals are supplying beds in the proportion of about 1 to 1,000 of population. In my opinion this is inadequate, and the provision ought to be, in industrial areas, 3 to 1,000 of population, and in rural areas 1 or 1.5 to 1,000.

From the financial particulars given it will be seen that the deficit was about one-seventh of the total ordinary expenditure. The financial difficulties from which many of the voluntary hospitals throughout the country are known to be suffering are due to increased expenditure and diminished income.

The expenditure of hospitals is increased by the higher cost of foodstuffs, drugs, surgical dressings, and hospital furnishings; by the increased cost of labour and of materials for cleaning, repairs, and alterations; and by the increase in salaries and wages, including the larger staff needed to meet the requirements of nurses and other employees for shorter hours. In addition to these causes, common to almost all undertakings at the present time, there is the fact that the number of patients treated has largely increased; many more people are now using the hospitals than formerly; they no longer look upon them with dread as places to die in, but as healing houses where the best nursing and medical skill can be obtained to restore them to life and activity.

The diminished income is due, first, to diminished subscriptions; secondly, to depreciation in invested funds; and thirdly, to the fact that the hospitals no longer receive the capitation grant from the War Office for the military patients they did so much for during the war. The beds which were occupied by the paying military patients are to-day occupied by non-paying patients, so that some hospital committees are considering whether they must not restrict the usefulness to the public of their institutions by closing certain wards.

To prevent such a catastrophe the Joint Council of the British Red Cross Society and the Order of St. John desires to offer voluntary hospitals assistance, financial or other.

The Survey figures show that for 543 hospitals the excess of ordinary expenditure over ordinary income during 1919 was £475,627—that is to say, that for all the provincial voluntary hospitals the deficit on the year's working was approximately £600,000, a sum probably much below what had generally been supposed.

These figures, however, do not fully represent the true situation. In view of the extra cost of labour and materials many hospitals have refrained from carrying out the necessary repairs, alterations, and improvements that have fallen into arrears since the beginning of the war. Further, many have been "carrying on" with plant much of which is out of date. For instance, in some cases new laboratory provision is needed, and new *x*-ray plant, fresh operating theatre and appliances are necessary to bring them up to the standard of modern requirements. Especially the larger hospitals—groups (*a*) and (*b*)—are faced with increased expenditure in providing additional accommodation for an enlarged nursing staff. In fact, this is one of the most pressing problems confronting many of these hospitals. Again, there is the necessary expenditure for increasing the accommodation for patients.

It has become of late almost impossible for one to speak on this question of hospital finance without being confronted with the question, Are you in favour of the hospitals being nationalized, or do you favour the voluntary principle? I do not regard it as altogether unfortunate that this important subject of hospital service has become a matter of discussion between those holding opposite views, for both are seeking doubtless for a more efficient service in the healing of the people and the general welfare of the State. My own impression is that the controversy is likely to end in the old-fashioned British way of compromise. There is room and need for both State aid and voluntary service. From the standpoint of finance I suggest that the voluntary principle has failed to meet the needs of the present situation, owing not to any fault in the principle as such but to the methods of its application. The voluntary principle of finance operating in many of our hospitals belongs to the nineteenth century, and has failed to adapt itself to the situation of to-day. If the voluntary methods are brought up to date, I have no doubt they will go a long way in the maintenance of our hospital system. Illustrative of the former methods, one hospital secretary informs me despairingly that his committee recently issued through the post 25,000 copies of an appeal for funds in support of the large hospital in the town, with the result that the annual subscriptions were increased by £50 and some £500 was received in donations. Now let me give two instances of more recent methods. One secretary writes:

> You may be interested to hear that considerable progress has been made by the committee in connexion with their appeal for funds. With only two exceptions up to the present, all the men in the large works in the town have agreed to contribute for a period of three years the sum of 1d. in the £ earned per week, and an effort is now being made to induce the employers of labour of all kinds to contribute £1 per man over the same period, and I am glad to say there is good prospect of many of them doing so.

At another hospital the report is:

> The Workpeople's Hospital Fund, which is entirely organized by the workpeople of the city, have made great efforts to induce their members to double their subscriptions at least, and to subscribe twopence per week instead of a penny, and although the scheme has only been in work for a small portion of the year, it has resulted in an increase of the funds at their disposal for the benefit of the medical charities making their grant to this one hospital of £11,500 for the year. Following on these lines a scheme is also being launched to give the employers of the city the opportunity of bearing their share in the expense of this hospital and the other charities. Under this scheme the employers make a voluntary levy upon themselves of 2s. per annum per employee (less than one halfpenny a week). So far the scheme has met with universal support, and this hospital's share will amount to £10,000 or £12,000 a year.
>
> One well-known business firm has made an interesting offer to the local hospital—namely, to defray the actual cost of in-patient treatment of any of their employees and dependants, based on the cost of the previous hospital year.

In these examples I suggest that we have a more satisfactory basis of hospital support than has hitherto obtained.

Paying Patients.

A number of the provincial hospitals now provide private wards for the treatment of paying patients, more particularly the small or cottage hospital group. Comparatively few of group (*a*)—the largest type of hospital—have yet adopted this idea, but many admit that they are now considering the advisability of doing so. As soon as the public knows that in the general hospital there is accommodation for those who can afford to pay modified fees, in addition to the free beds, then I suggest that to the patients themselves may be left the choice between free and paying bed. The basis of money distribution has altered considerably since pre-war days, and hospital provision might quite well accommodate itself to the altered circumstances.

State Aid.

One of the chief functions of the Ministry of Health is to endeavour to co-ordinate the various agencies at work in the country seeking for the prevention and cure of disease. In no branch is this co-ordination more needed than in the voluntary hospital system. Each hospital to-day is an isolated unit working on its own, with comparatively little knowledge of what other hospitals are doing; and whatever be the extent of State assistance to the voluntary hospitals, I suggest that it might be accompanied by some attempt at co-ordinating the work of these institutions, leaving the management in the hands of those voluntary committees who have rendered such excellent service in the cause of the sick and suffering, and who know the local needs of their districts.

Hospitals Associated with Medical Schools.

Of the five groups of hospitals set out in the survey it will be seen that group (*a*)—the largest hospitals—show an

excess of ordinary expenditure over ordinary income for the year of £355,685. In that group of eighty-two hospitals are included fifteen hospitals attached to medical schools. The figures are as follows:

Number of school hospitals	15
Number of beds	4,791
Average number of beds to each hospital ...	319.46
Total ordinary income	£490,934
Total ordinary expenditure	£688,174
Excess of expenditure over income	£197,240

In London the medical schools and their hospitals are under the same management or authority, whereas in the provinces the medical school and the hospital are separate institutions, and administered by entirely different authorities. The Board of Education gives annual grants to the medical schools, but not to the associated hospitals, which provide the facilities for the clinical training of the medical student. These hospitals, I suggest, are important national outposts, and in the interests of the training of the future medical practitioners of the country merit some special consideration from the State.

The Demand for More Beds.

The statements made by so many voluntary hospitals as to the crowded condition of the available accommodation, and the number of patients waiting for admission, taken in conjunction with the fact that 296 hospitals, with 23,621 beds, had an average daily occupation of 18,705 (79 per cent.), indicate that the present available accommodation in the voluntary civil hospitals is not adequately meeting the needs of the people.

The pressure is undoubtedly greater in some localities than in others, and I suggest that it is sufficiently widespread and acute as to justify the need for an official inquiry on a broader and more detailed basis than that of the present survey. Such an inquiry should be undertaken by some commission visiting the more important areas and ascertaining on the spot the actual requirements, and how best they could be met. This should be undertaken before the hospitals launch the new building schemes they now have in contemplation, and also before the Government finally decides on its hospital policy.

Apart altogether from the unalleviated personal suffering, I suggest that these waiting lists have an economic importance to the State in that so many men and women have idleness and unemployment compulsorily thrust upon them.

How is the Demand to be Met?

Two questions arise with regard to the demand for more hospital beds:

First, are the present hospital beds being put to their best use? I suggest that the voluntary hospitals, instead of seeking continually to enlarge their capacity, might seriously consider the problem from another angle—namely, how to accelerate the discharge of their patients and thus make room for those on the "waiting list." I admit that to-day many patients are discharged too soon, to return to their homes, with the result that sometimes the cure begun in hospital remains uncompleted in the home and the patient's name reappears on the "waiting list." They should return to their homes by way of the convalescent hospital. Undoubtedly additional hospital provision is needed in many localities, but the suggestion is worthy of consideration before large and expensive building schemes are entered upon. Throughout the country there are to-day some 12,000 convalescent beds under the control of a large number of private associations. Of these beds, only some 2,200 are directly affiliated to the voluntary hospitals.

Further, in many hospitals there is quite a number of chronic patients never again likely to be fit for active duty who are occupying beds. They might be transferred to other institutions specially reserved for this class of case.

The second question is, Are we as a nation to continue for all time building more and more hospitals? Is there to be no attempt made to lessen the demand for and the need of these expensive institutions? There are thousands of people who might be prevented from graduating as in-patients of hospitals if in the early stages of their illnesses they were prescribed a fortnight's residence in a convalescent home in the country. Every doctor practising in industrial and manufacturing communities realizes how true that statement is. How often he is at a loss to know what to do for a patient not responding to medicine and yet not sufficiently ill to be admitted to hospital. These are patients showing the beginnings of disease; and instead of allowing them to continue their work in the factory or shop, for which they are temporarily unfitted, they ought to be sent to the convalescent home for a short period, and thus short-circuit them from becoming hospital patients.

Our policy in dealing with disease is so often "too late," that I put forward a plea for the establishment of pre-hospital convalescent homes for the arrest of these early phases of disease, and thus lessen the ever-growing demand for more and more hospitals. Birmingham has this idea already in operation for pensioners in the form of a chain of convalescent institutions scattered along the Welsh coast.

These homes might be associated with the local municipalities, under the guidance and direction of the public health committees, whose main function is prevention rather than the cure of disease. Such institutions should operate in close association with the out-patient departments of the local hospitals. If the medical officers in attendance could be provided with a wider outlet for their treatments in the direction of convalescent homes, the pressure on the hospital beds would be relieved.

Scarcity of Nurses.

I was somewhat surprised to find how widespread was the shortage of nurses at the hospitals, both large and small. Among the larger hospitals comparatively few stated that they had a sufficient number to select their probationers from. The greater number of hospitals indicate not only a deficient supply, but also that the general standard of the applicants was not of a high order, whereas both quality and quantity were complained of in the smaller hospitals.

There is a shortage of probationer nurses, and this is a question of some national concern, for the great majority of the nurses trained in our hospitals in due course pass into the service of the general community, so that the diminished supply of probationer nurses in the hospitals to-day will, in three years' time, reveal itself in a shortage of nurses for the private household.

I submit the following reasons in explanation of the present falling off in the supply of hospital nurses—namely:

1. The inducements offered in other professions. For example, a woman may become a trained masseuse in about a third of the time required to qualify as a nurse, and receive about double the salary. A stenographer can earn from £150 to £200 per annum after twelve months' training.
2. Health visitors and the school medical service, and even the medical profession itself, are now absorbing a considerable number of women who have either trained as nurses or who would have been eligible for the nursing profession.
3. A spirit of revolt against the long hours of drudgery in ward work and the low rates of pay that have hitherto obtained in this profession.
4. A neglect on the part of the hospital authorities or of the community in which the hospital is located to offer facilities for the social welfare and general training of the nurses. Plenty of time and energy as a rule are expended on the professional side of her training, but far too little has been attempted in the way of providing opportunities for the more general development of the nurse's life.

Further, in view of the national aspect of this question, I suggest that the Ministry of Health or Board of Education might supply money grants to hospitals for the training of nurses, as is now done in the case of lying-in institutions. Such grants might be apportioned in part to the hospital and in part supplementing the nurse's salary. In this way it would be possible for the central authority to exercise some control over the general standard of training, which varies greatly in different institutions.

The nursing difficulty in the case of the small hospitals is in large measure due to the number of beds being below the standard required for a hospital to be recognized as a training school for nurses granting the requisite certificates. Obviously a probationer will select a hospital for her training that is in a position to grant her the authorized certificates.

In order to overcome this difficulty some of the smaller hospitals are making arrangements with the nearest large hospital to share in the training of probationer nurses. Further, the local Red Cross associations are prepared to recommend V.A.D. members for part-time service in these smaller hospitals.

British Medical Journal.

SATURDAY, MAY 22ND, 1920.

THE HOSPITAL SURVEY.

THE account which Sir Napier Burnett gives in this issue (p. 710) of the preliminary results of the survey of voluntary hospitals which he has carried out for the Joint Council of the British Red Cross Society and the Order of St. John will be read with much interest, and may serve as a prelude to the account which we expect to be able to give in our next issue of the interim report on the organization of the medical services of the country which the Medical Consultative Council of the Ministry of Health has prepared. The survey is concerned with the work done by the voluntary hospitals throughout England and Wales, excluding London, and with their financial position. The survey extended to 550 voluntary hospitals in the fifty-five counties of England and Wales; this is 78 per cent. of the whole number. The information obtained was not uniform, being far more complete in the case of some hospitals than of others. On most of the main points, however, the figures are sufficiently complete to justify certain conclusions.

The first point that emerges is that 507 hospitals provided nearly 30,000 beds, so that the total number of beds in voluntary hospitals must be well over this amount. The return as to hospital accommodation in England and Wales, prepared by the Local Government Board[1] and published in June, 1915, showed, in round numbers, 33,500 beds in the general and special hospitals, excluding London. The results of the two investigations are therefore concordant, and would appear to indicate that the provision of beds in voluntary hospitals is in the proportion of rather over one bed to 1,000 of population. The Local Government Board return showed that there were in the Poor Law infirmaries, including sick wards at workhouses, 94,000 beds (74,000 outside London) and 39,121 in fever and small-pox hospitals (30,367 outside London). The total number of beds in hospitals of all sorts and in Poor Law infirmaries in the whole country was 178,525, or 4.9 beds to 1,000 population; but the beds in fever and small-pox hospitals should be omitted in order to obtain a correct view of the situation; when this is done the proportion of beds to population is reduced to about 3.5 to 1,000 population. Sir Napier Burnett expresses the opinion that the proportion ought to be, in industrial areas 3 beds to 1,000 of population, and in rural areas 1 or 1.5 to 1,000 of population.

The results of his survey, taken together with the facts given in the Local Government Board return, show how important a part Poor Law infirmaries can be made to play in the provision of hospital accommodation and how nearly, to a rough estimate, the total number of beds which would be made available by their inclusion approaches the proportion which he considers necessary. A deduction must, however, be made in respect of the sick wards at workhouses, which, in many instances, do not come up to hospital standard. The reform of the Poor Law is promised and cannot be long delayed; the London County Council last year expressed the view that the health functions of the Poor Law authorities should be divided between the council and the borough councils, and proposed that a central council of London hospitals should be formed, having a large voluntary representation but containing members nominated by the County Council and the Ministry of Health. It laid down also the principle that, except for public services dealing with environmental conditions, public authorities in providing medical treatment should recognize the principle that the cost of such treatment should be borne to the extent of his ability by the person treated or by a fund like the insurance fund, made up mainly by the contributions of employers and employed. In replying to a deputation from the London County Council on April 23rd the Minister of Health said that it would not be possible to split up hospital supervision and that the main principles governing the Council's recommendations were unassailable.

The results of the survey on the financial side are, as its author indicates, rather surprising; the deficit on the year's working (1919) of the provincial voluntary hospitals is estimated at approximately £600,000, an amount equal to about one-seventh of the total ordinary expenditure, a proportion probably, as he says, much below what had been generally supposed. The facts, however, are not so satisfactory as might be concluded from this generalization, for repairs, alterations, and improvements which have been accumulating since the beginning of the war will now have to be carried out, new apparatus must be provided, and increased expenditure will be incurred by the employment of a larger nursing staff and in providing additional accommodation for it. The Joint Council intends to make an attempt to raise a sum of £1,000,000 a year by public appeal, not only to the classes who have hitherto been the largest contributors to voluntary hospitals, but also for an increase in the workmen's contributions, which already constitute about 16 per cent. of the ordinary income of voluntary hospitals outside London.

From the point of view of public policy the most instructive part of Sir Napier Burnett's comments on his survey is contained in the paragraphs discussing the demand for more beds and the manner in which it should be met. He asks the pertinent question whether the only way in which the demand can be met is by building more hospitals or adding to those already in existence; would it not, he asks, be possible to relieve the general hospitals, which are necessarily expensive to erect and maintain, by providing auxiliary institutions? Such auxiliary institutions, he suggests, would include not only convalescent homes, but similar institutions for the reception of persons not sufficiently ill to be admitted to hospital, but needing rest and change of air for their restoration to normal health. In this way he thinks that part of the stream of persons who now eventually become hospital patients might be short-circuited. Another illustration of the same principle is afforded by the paper of Mr. Girdlestone on the care of crippled children, published at p. 697; it illustrates the need for special methods and modes of institutional treatment for a special class of case, for whom the best treatment is to be obtained, not through the elaborate and necessarily expensive equipment of a large general hospital, but through the good fresh air and food and the kindly nursing, under skilled medical supervision, in a country institution where they can also have the advantage of elementary education, and eventually, perhaps, of early training for a skilled occupation.

[1] H.M. Stationery Office, 1915. Through any bookseller. Price 3s.

THE DANGEROUS DRUGS BILL.

ON May 4th the Home Secretary, in redemption of promises repeatedly given, introduced a bill—the Dangerous Drugs Bill—"to regulate the importation, exportation, manufacture, sale, and use of opium and other dangerous drugs." A brief memorandum attached to the bill explains that it has been prepared to give effect to the International Opium Convention signed at the Hague more than eight years ago. In an article which appeared in the JOURNAL of March 6th last we adumbrated the presentation of this bill, and added that we looked to the Government to lose no time in handling this question effectively.

There is no doubt that, as pointed out by Sir William Collins in these columns on September 20th, 1919, the Treaty of Versailles has given a fresh impetus to the effectuation of the International Opium Convention of 1912. As explained in an answer given by the Foreign Office to a question in the House on December 2nd, 1919, and as is repeated in the memorandum to the bill, Great Britain, although, unlike some of the Powers which are contracting parties to the Treaty of Versailles, she had prior to the war ratified the Opium Convention, yet holds herself bound, by Article 295 of the Peace Treaty, to enforce the Convention forthwith and to enact the necessary legislation within a year from the coming into force of the Treaty.

The Dangerous Drugs Bill consists of fifteen clauses and is in four parts, dealing respectively with raw opium, prepared opium, morphine, cocaine, etc., and certain general administrative questions. The bill as drafted appears, broadly speaking, to follow the provisions of the Hague Opium Convention. As regards "prepared opium"—that is, opium prepared for smoking—its import, export, manufacture, use, and possession are absolutely forbidden, as far as the United Kingdom is concerned, under penalty of a fine not exceeding £200, or imprisonment, with or without hard labour, not exceeding six months. As regards raw opium, morphine, cocaine, ecgonine, heroin, and their salts, and medicinal opium, their import and export are forbidden, except under licence, under similar penalty. No raw opium may be exported to any foreign country prohibiting its import nor, except under appropriate restriction, to any country restricting such import. Regulations, which must be laid before Parliament, may be made for preventing the improper use of the alkaloids already mentioned or of medicinal opium, whereby the manufacture, sale, possession, and distribution will be controlled. To this end the manufacture of these drugs will be restricted to licensed premises, and the traffic in them to authorized persons; the prescription and dispensing of such drugs will also be regulated. The premises, books, and stocks of persons producing or dealing in these drugs will be liable to inspection. Preparations containing less than one-fifth per cent. of morphine or less than one-tenth per cent. of cocaine, ecgonine, or heroin fall outside the purview of Part III of the Bill. There is power by Order in Council to add any new derivative of the aforenamed alkaloids or "any other drug of whatever kind (which) is or is likely to be productive, if improperly used, of ill effects substantially of the same character or nature as or analogous to those produced by morphine or cocaine," to those enumerated in the Bill.

Much will depend on the nature of the regulations which will be drafted under the powers conferred, presumably on the Home Secretary, and almost everything will depend on the vigilance of administration by the Customs officers and inspectors charged with the new duties. The smallness of bulk of the dangerous alkaloids must inevitably make their supervision, from manufacture to distribution, a matter of considerable difficulty, and the misuse of prescriptions will require to be carefully guarded against. It must nevertheless be conceded that the Bill now introduced represents a bona fide attempt to give effect to the requirements of the Opium Convention, especially in the case of the alkaloids of addiction, whose inclusion was so strongly pressed at the Hague by the British delegates on behalf of their Government. If all those Powers which, by their ratification of the Convention or by their signature of the Special Protocol or by adhesion to the Peace Treaty, are similarly bound will proceed forthwith to enact and enforce similar legislation, the appalling over-production of these drugs, in excess of legitimate requirement, should be checked, where alone it can be effectually checked, at the source.

It will be remembered that the general supervision of the international execution of the Opium Convention is entrusted to the League of Nations. As it is understood that the Dutch Government, which has played so courteous and successful a part hitherto in promoting the effectuation of the Convention, is desirous that further steps in this direction should now rest with the League, there should be no difficulty in that body urging the universal adoption of legislation similar to that which is now before the Commons of the United Kingdom.

SECTIONS AT THE CAMBRIDGE MEETING.

THE following programme has been arranged for the Section of Electro-Therapeutics at the forthcoming Annual Meeting of the British Medical Association at Cambridge. On Friday, July 2nd, the President of the Section, Dr. A. E. Barclay, will give his address on the place of the radiologist in medicine. Mr. H. S. Souttar will open a discussion on diagnosis and treatment of paralysis caused by nerve injury. Papers will be read by Dr. Robert Knox on tumours of the chest; by Dr. Howard Humphris on the use of the melted paraffin wax bath, and the tungsten arc-light; by Dr. E. P. Cumberbatch, on the treatment by diathermy of intravesical growths and ulcers of the urinary bladder; by Professor J. Goodwin Tomkinson on *x*-ray therapy in oriental sore; and by Dr. S. Gilbert Scott on the diagnostic value of the renal outlines and the method of determining the relation of abnormal shadows to them. A joint discussion with the Section of Obstetrics and Gynaecology on the treatment of uterine fibroids by *x* rays will be opened by Dr. Robert Knox. The Naval and Military Section will meet on Wednesday, June 30th. In the morning a discussion on the Army Medical Service and its relation to the education and training of newly qualified medical men will be opened by the President, Colonel Joseph Griffiths, at 10 o'clock. The discussion will be followed by papers on the evolution of protective measures against gas warfare; on the relation of the condition of the teeth to the physical fitness of the soldier, and on the incidence of water-borne disease in the Gallipoli campaign. In the afternoon there will be a demonstration by officers of the Naval, Military and Air Force Medical Services, who will exhibit the various improvements and inventions that arose during the war. Details of the arrangements for all the Sections are given in the SUPPLEMENT, p. 161.

THE ASSOCIATION OF SURGEONS.

THE newly formed Association of Surgeons of Great Britain and Ireland held its first meeting in London at the end of last week. The proceedings opened on Thursday afternoon, when the president, Sir John Bland-Sutton, gave an address, in which he sketched the early history

of surgery. It will be published in full in the *British Journal of Surgery*, which has now become the property of the Association of Surgeons; those who know the author will not be surprised should it turn out that he followed the Horatian maxim that a lesson may sometimes be best enforced by quips of wit and sallies of humour. On Friday morning, May 14th, a discussion on the ritual of the surgical operation was opened by Sir Berkeley Moynihan and Mr. Raymond Johnson. Saturday morning was devoted to the study of the specimens in the war collection in the museum of the Royal College of Surgeons; Professor Keith related the history of the collection, Sir George Makins spoke on specimens of wounds and blood vessels, and Sir Cuthbert Wallace on gunshot injuries of the abdomen. The afternoons of Friday and Saturday were spent at various London hospitals, where operations were witnessed. On Thursday evening Sir John Bland-Sutton entertained members of the Association to the number of over one hundred at Claridge's Hotel. Speeches after dinner were few and happy. The host spoke of the birth of the Association, and Sir Berkeley Moynihan, who may, perhaps, be called its father, said that surgical thought in Great Britain and Ireland had been deep, but it was hoped through the new Association to lead it into wider channels. Mr. Herbert Pendlebury, the honorary secretary, also responded, and Mr. Thomas Sinclair, C.B., of Belfast, proposed the health of Sir John Bland-Sutton, which was received with enthusiasm and acknowledged in a few characteristic phrases. The menu was adorned with a reproduction from a Pompeian mural painting showing the surgeon Iapyx extracting the head of the dart from the wound in the thigh of Aeneas. (*Aeneid*, Lib. XII.) Among those present at the dinner were the Earl of Athlone, chairman of the Board of Management of the Middlesex Hospital, Sir Robert Hill, Medical Director R.N., Sir John Goodwin, Director-General A.M.S., Sir George Makins, President of the Royal College of Surgeons, Sir William Macewen of Glasgow, Professor Marnoch of Aberdeen, Sir Harold Stiles and Professor Alexis Thomson of Edinburgh, Sir Robert Jones and Mr. Thelwall Thomas of Liverpool, Sir William Thorburn of Manchester, Sir W. de C. Wheeler of Dublin, Sir Rickman Godlee, Sir Gilbert Barling, Sir Anthony Bowlby, Sir Charles Ballance and Sir Hamilton Ballance. Among the guests were the Editors of the *Lancet* and the BRITISH MEDICAL JOURNAL, and it may be concluded that though the Association will not permit its discussions to be reported, it bears no ill-will to the medical press. The rule prohibiting the reporting of discussions is, we believe, in the case of a meeting of experts where free discussion and criticism is desired, altogether sound.

POST-GRADUATE COURSES.

THERE are many signs of a growing desire on the part of a large number of medical men, both at home and in the Dominions, to make use of opportunities for attending post-graduate courses in Great Britain. We publish elsewhere particulars of the scheme which is being evolved in Glasgow, and some time ago gave information as to the plans at Edinburgh. The courses in Manchester are regularly noted in our columns, and a little time ago we gave an account of a special course in spa treatment to be held in Bath during next month; a great deal of trouble has been taken by the profession in Bath to arrange a useful and comprehensive course extending over a fortnight. An introductory lecture will be given by Dr. Cave on June 7th, and among the subjects to be treated during the course will be those bugbears of practice—gout, fibrositis, and arthritis of various forms, including rheumatoid arthritis and osteo-arthritis. Ample opportunities will be afforded for clinical observation in the wards of the hospitals and the method of using the waters of spas will be illustrated. The Fellowship of Medicine is receiving from all parts of Canada and the United States a steady flow of inquiries about opportunities for graduate study in London. Last year the graduates, who crowded the courses arranged by the Fellowship, were chiefly army medical officers brought together under exceptional circumstances, and in most instances still in military employment. This season the graduates are coming upon their own initiative and at their own personal expense. Their number is a matter of speculation, but each week adds names to the register, and day by day arrive reports of those who are contemplating the journey. The future of London as a post-graduate centre will be largely determined by the opportunities offered to overseas visitors during the immediate future. The call is for clinical work, and particularly for short intensive courses in special subjects. Additional courses should be arranged without delay, and with as long a preliminary notice as possible. A time-table should also be drawn up to cover the holiday season; work naturally slackens in London from the middle of July to the end of September, but it is during this vacation period that many men will fit in a course of study, and these dates are specifically mentioned in many letters of inquiry. As London is not wholly a desert during the summer months there should be more than one way of surmounting the difficulty. The Fellowship of Medicine is conducting a propaganda which reaches the entire English-speaking medical world, and the more energetically this young organization is supported the better the hope that its efforts will be fully successful. The argument that because London has not been a post-graduate centre in the past the present campaign must necessarily fail is threadbare. It is clear that the English-speaking graduates from overseas want to come to the home country and that many of them desire to attend courses in London, if the capital city of their race will give them what they need.

LEICESTER UNIVERSITY COLLEGE.

DR. ASTLEY CLARKE, in his presidential address to the Leicester Literary and Philosophical Society in 1912, suggested the establishment of a university college for Leicester; his address led to much discussion, and matters were in train when the outbreak of war arrested the scheme. Its consideration was resumed in March, 1918, when a provisional committee was formed and a fund established, to which Dr. Finch bequeathed £5,000. A public meeting to discuss the position was then held, and the site of the Fifth Northern General Hospital was presented, with the buildings thereon, which are of considerable size, to the city of Leicester for educational purposes; it was resolved to establish the Leicestershire and Rutland University College. The fund now, before any appeal has been made, amounts to £100,000. The appeal, which is just being issued, states that the purpose of University College is to provide advanced education in the pure sciences, in arts and economics, in the fine arts, and in those branches of technology that are vital to Leicester. It is felt that Leicester, which is largely concerned in the manufacture of boots and shoes and hosiery, and in engineering, ought to play a great part in meeting the need for that increased and more enlightened production which alone can bring national and international stability. Classes will be started in the autumn. The trust deed has been completed, and the domestic science college will be removed to the new building at an early date. The provision of hostel accommodation is contemplated. The local Division of the British Medical Association was one of the first bodies to pass a resolution in favour of the college, and is represented on the Committee, of which Sir Jonathan North is chairman and Dr. Astley V. Clarke vice-chairman. Among the other members are Dr. Wallace Henry (at whose instance the local Division adopted the resolution mentioned), Dr. L. K. Harrison, and Dr. R. Sevestre (Leicester Medical Society). One of the principles adopted is that no university college or university should

managed by the educational authorities of the city or county council alone; it is held that the governing body should represent a wider constituency. We have already on several occasions mentioned the movement in Nottingham for the establishment of an East Midland University. Conferences have been held between the Nottingham body and the Leicester committee, at which Leicester has expressed its willingness to join Nottingham on equal terms as a federal college. While Leicester feels itself strong enough to stand on its own feet it recognizes that a university of federal colleges would be stronger, and there is reason to believe that this view will prevail with Nottingham also.

WHAT THE SOLDIER SAID.

WE regret to observe, from accounts printed in *The Times* and *Daily Mail* of May 12th, that the Westminster Coroner does not always remember what is due to his office. He held an inquest last week on the body of an engineer's fitter, aged 28, who threw himself into the Thames and was drowned. The father stated that his son, David Carey, joined the army in 1914, and was discharged in 1916 for valvular disease of the heart: "An army doctor told him that he only had three or four years to live." In reply to the Coroner, who asked "Did your son sometimes refer to the fact that he was sentenced to death, so to speak?" the witness said: "Yes, he often said so, and worried about it." A police surgeon who made the necropsy said that he found all the organs normal and the heart one of the healthiest he had ever seen; there was no trace of valvular disease. The Coroner then sought to lead this medical witness on to express an opinion about what a professional colleague was stated to have said four years ago. The police surgeon agreed that it would be very silly, very unkind and very wicked of a doctor to profess dogmatically that a man could not live beyond a certain number of years, and to tell the man so. The Coroner is reported to have then made the following fatuous remark: "I read of a case of a man who had been in the Royal Hospital for Incurables for fifty years and died aged 90. That shows that mistakes are made by doctors who are dogmatic." In his summing up the Coroner, we fear, must have had more than a side glance at the reporters. Taking as his text the commonplace that for a doctor to tell a patient that he has only a limited time to live is generally wrong, he aired his ideas on dogmatism in prognosis, and declared that in this case a perfectly healthy young man had been condemned to death by a doctor, with the result that he came out of the army broken-hearted and drowned himself. "Carey might have lived for many years, but some ignorant fool of a doctor, who did not know his work, diagnosed heart disease and doomed him to death." After this a verdict of "Suicide while of unsound mind" was recorded. Now the Westminster Coroner is a medical man, and he must know that even educated people cannot be trusted to report accurately what a doctor said ten minutes before. The Westminster Coroner is also a barrister-at-law, and knows the worth of hearsay evidence. He may even be familiar with Mr. Justice Stareleigh's dictum about "what the soldier said" in the leading case of "Bardell *v.* Pickwick." Nevertheless, it seems that the Coroner in this case accepted without hesitation the third-hand story of what an army doctor was said to have told a soldier in 1916, and that he used this unverified tale as a stick wherewith to beat an absent colleague. The circumstances of the man's discharge from the army must be on record, but the Coroner does not appear to have called for any evidence, documentary or otherwise, from the military and pensions authorities. The medical profession has had much to put up with from lay coroners; it looks to the medical coroner to set an example of fairness towards medical practitioners, absent as well as present.

HOME AMBULANCE SERVICE.

THE Motor Ambulance Service for England, Ireland, and Wales, instituted by the British Red Cross Society and the Order of St. John, has now completed its first year's work, and the report shows that the service had already proved itself very useful. The scheme was initiated shortly after the armistice, when the Red Cross had a very large fleet of motor ambulances for the transport of the sick and wounded. It was decided that a selection should be made from the best of these ambulances, which—after the cars had been thoroughly overhauled and equipped—should be distributed on loan throughout the country for the benefit of civilian and pensioner patients. Arrangements as to their distribution in the counties were made by head quarters working in close co-operation with county directors; the ambulances are placed in charge of Red Cross detachments, special committees, or local authorities, as local circumstances dictate. Over 300 ambulances have been allotted under the scheme, and already 256 of these are at work. It is intended that, as far as possible, the service shall be self-supporting, and a charge is made for the use of the ambulances, which is, however, remitted in necessitous cases. The provision of these ambulances has met a want that had become very urgent by supplying transport for the removal of the sick to hospitals and convalescent homes. In rural areas particularly—towards which special consideration has been given in the distribution of cars—there existed a great lack of means of transport for the sick. This want the Home Ambulance Service is filling with complete success. Although the greater number of the ambulances distributed have been working for only a few months, the number of cases carried already exceeds 7,000. Every county has now its ambulance stations, and the number will be increased as the remaining ambulances allotted become available for distribution. The service has been adopted by the Ministry of Pensions for the transport of all pensioner patients, a very considerable number of whom are periodically taken to hospitals for treatment. In addition to the ambulance stations in the counties, a central unit is being organized in London to meet a need found to exist for cars to link up the work of the counties and to provide for the transport of cases between the railway termini. This unit, it is hoped, will also be of service in supplying ambulances for patients entering and leaving nursing homes in London. It has been wisely determined to maintain central control of all the ambulances, and thus any which are not found to be serving a useful purpose can be transferred. This provision will enable the committee to adapt the scheme to the changing conditions affecting health administration. As schemes for hospital co-ordination develop, the service can be so adjusted that the ambulances may be placed wherever it is found that they will most efficiently supply the needs of the public.

PLANT RESPONSE.

IT will be remembered that last March Sir J. C. Bose gave a demonstration at the Royal Society of Medicine of plant growth as demonstrated by his instrument, the magnetic crescograph, and that after the demonstration Dr. Waller raised the question whether the movements might not be due to heating effects, and invited the lecturer to repeat his experiments under laboratory conditions here. This invitation was accepted, and on April 23rd Sir J. C. Bose gave a demonstration in the physiological laboratory of University College, London, in the presence of Professor Bayliss, Lord Rayleigh, and other authorities on physiology and physics, who reported that they were satisfied that the growth of plant tissues was correctly recorded by the instrument at a magnification of from one to ten million times, and continued as follows: "We saw in particular that a flower-bud in active growth,

if treated by immersion in a solution of potassium cyanide for some hours, no longer gave a movement of the recording spot of light. We conclude that such movement, when shown by a similar bud in the active state, is not due to accidental stretching or to undetected effects of currents of air, radiant heat, etc. We agree that the instrument correctly records changes of length in the growing tissue, or, indeed, of any substance attached to the lever of the instrument, however such changes may be produced. Naturally, under the conditions of the experiments, it was impossible for us to analyse completely the complex effects produced by the passage of an electrical current." At the meeting of the Royal Society on May 13th Dr. Waller gave a demonstration, using an apparatus of his own which magnified only one thousand times, but would yet enable a record to be obtained on a photographic plate of the effect of electric stimulation on living plants, on plants killed by boiling, and on fiddle-strings as had previously been shown by Engelmann. He adhered to the view he had previously expressed that Sir J. C. Bose had not established his point. A somewhat animated discussion followed, and Sir J. C. Bose replied. The President, Sir J. J. Thomson, said that the instrument devised by Sir J. C. Bose was very ingeniously adapted to register very small movements, and might be of use in physics.

THORACOPLASTY IN PULMONARY TUBERCULOSIS.

PROFESSOR SAUGMAN has recently published[1] an account of the 40 patients on whom he has performed thoracoplastic operations at Vejlefjord Sanatorium. In all these cases the pulmonary disease was advanced, and owing to extensive pleural adhesions collapse of the lung by artificial pneumothorax was not feasible. The position, then, of these patients was, under ordinary circumstances, practically hopeless. Yet, by adequate collapse of the most diseased lung by extensive extrapleural resection of ribs, Professor Saugman was able to restore 13 out of the 40 patients not only to comparative health, but to a certain capacity for work. Another paper on this subject deals with the results achieved by Professor Bull in Christiania. In his first series of 11 cases the operation was fatal in 3; in his second series of 26 cases there was only one death from the operation. He attributes this great improvement in his immediate results to various changes in method, the most important being the performance of the operation in two stages instead of one. Of the 33 patients who survived the operation 7 died later from tuberculosis and one of influenzal pneumonia; 11 of the remaining 25 were at work, were always free from fever, and their sputum no longer contained tubercle bacilli. They had also ceased to cough, except when they caught "colds." In 7 other patients the final result could not be stated, as less than a year had passed since the operation was performed; in several, however, tubercle bacilli had disappeared from the sputum, and other signs of improvement had been noted. Professor Bull believes, therefore, that several of them may ultimately be included among his "cures." It is an instructive fact that, though these two writers have worked independently, their results are strikingly concordant. They show that, roughly speaking, a third of the patients who undergo extrapleural thoracoplastic operations may expect complete arrest of the disease, in spite of being in the last stages of pulmonary tuberculosis.

CENTENARY OF DR. LOGIE OF KIRKWALL.

As we briefly announced, Dr. James Scarth Spence Logie, the doyen of the medical profession in the British Isles, celebrated his centenary last week. He was born in Kirkwall, Orkney, on May 11th, 1820, and received his early education at the Kirkwall Grammar School. He took the diploma of L.R.C.P.Edin. in 1841, and graduated M.D. of the University of Edinburgh in 1842, at the early age of 22. His diploma is signed by Sir Robert Christison, Professor James Syme, Sir James Young Simpson, and Dr. Thomas Stewart Traill. He was one of the first to make use of chloroform anaesthesia after its discovery by his teacher, Sir James Simpson. For many years he conducted his practice with zeal and self-sacrificing devotion among the specially difficult conditions existing in the Orkney Islands. In the early days of his professional life there were no made roads in Orkney and no wheeled vehicles except farm carts. Dr. Logie has received a telegram from the King, an illuminated address signed by all the members of the medical profession in Orkney, a resolution of congratulation from the Senatus Academicus of the University of Edinburgh, and congratulatory telegrams from the President of the Royal College of Surgeons of England, and Sir Watson Cheyne, Lord Lieutenant of the County of Orkney. At its meeting on Wednesday, May 19th, the Council of the British Medical Association resolved to send to Dr. Logie a congratulatory message.

[1] *Tubercle*, April, 1920, which also contains an abstract of Professor Bull's paper.

THE LONDON SCHOOL OF TROPICAL MEDICINE.

THE London School of Tropical Medicine has arranged, in addition to its ordinary course designed for candidates for a diploma in tropical medicine, short courses of lectures and clinical and laboratory demonstrations on tropical diseases for those who cannot devote the whole three months to the full course. The lectures and demonstrations will be given on Mondays, Wednesdays, and Fridays, from 2 to 4 p.m. The first course will begin on Monday, May 31st, and end on Friday, June 25th. The lectures have been specially arranged for medical men engaged in pension work, who will be certain to meet with many cases of malaria and dysentery, but others who wish to acquire some practical experience in tropical medicine will find the means of doing so in this special course. The school and hospital are in Endsleigh Gardens, close to Euston Station, and can be reached easily from any part of London.

SIR ARCHIBALD E. GARROD, K.C.M.G., F.R.S., Regius Professor of Medicine in the University of Oxford, has been elected to a studentship of Christ Church.

Medical Notes in Parliament.

National Health Insurance Bill.

The Right of Appeal.

ON report on the National Health Insurance Bill, which was taken near midnight on May 13th, Captain Elliot submitted a new clause to enable a medical practitioner to appeal to the High Court (without further appeal) against the decision by the Minister of Health, or any special body acting for the Minister of Health, to remove the name of the practitioner from the list of panel doctors. Captain Elliot said this was a right granted in the 1911 Act, which was apparently being withdrawn under the present bill. If practitioners were struck off the panel under the 1911 Act they had a right to appeal under subsection 15 (*b*). The only right of appeal practitioners had under the bill was to the Minister of Health. They had no right of appeal to any legal body. If a medical practitioner who came on the panel by statutory right was considered to be conducting himself improperly his case was brought before a small subcommittee of doctors, then before the Insurance Committee, and from that the appeal was made to the Minister of Health; if these authorities were against him his name was struck off the panel. It was not fair that the bureaucracy should have this tremendous power over a medical practitioner. No one would risk embarking on some individual line of treatment if he knew that any failure of this treatment would be brought before a committee of what were, after all, his competitors. If they disapproved of his action the case went before the Insurance Committee, who would probably decide against him, and then the Minister of Health would find that he had to back up the Committee. Thus a man's career might be wrecked. It was all very well for the Minister to say that nobody asked a man to come on the panel, and

that he should not object if the Minister threw him off it; but the panel covered an enormous majority of the people of these islands. A man removed from it was faced with the ruin of his whole professional career, and should in the last resort have the chance of placing his case before an unbiassed and non-technical court. What was asked for was an ultimate court of appeal, and unless the medical practitioner considered that he had a very good case he would not run the risk of bringing it before a court of law.

Lieut.-Colonel Fremantle, seconding the motion, said Captain Elliot had spoken of the panel practitioner's work as practically becoming coterminous with the whole of the medical profession. But that was not so. There was another tendency which was rather dangerous. This was for certain members of the profession to say, "We will not practise under these conditions." If they were able to carry on private practice at higher fees they would have nothing to do with panel practice. That would be a bad condition for any Government service to get into. He had a very high opinion of his own profession and of Dr. Addison, but it was quite wrong that medical men should be judged like this by such means as was proposed. He could conceive of many mistakes that might happen and hasty judgements given. The Minister of Health, if busy in other directions, might be largely governed by the judgement submitted from below, and there would be a feeling of grievance. Therefore a doctor should be given a feeling of security in his practice.

Dr. Addison said that the speech of Captain Elliot was one of the most inaccurate he had ever heard. It had no real relation whatever to the facts. He had described the bill as an extension of the power of the bureaucracy; there was no alteration whatever; there was no fresh purpose in the bill from first to last. There was no word in the bill which related to the conditions of the removal of the medical man from the panel. The fact was that when a complaint was made under the original Act, if a medical man was to be removed from a panel, it had to be proved that he was doing something which was prejudicial to the efficiency of the service, and it was a very grave matter. In the next place the case had to go before the Insurance Committee, which was a lay body—not a professional body at all, not a body of jealous fellow medical men.

Lieut.-Colonel Fremantle, interposing, asked whether the following words were not true: "This will apply only after an inquiry by his own professional brethren in the first place."

Dr. Addison, continuing, said that the Insurance Committee, before stating a case, referred the matter to the Medical Committee to see if there was a case to be stated. But the Medical Committee did not judge the matter in any way. If there were a case at all—which of course it required professional examination to see—it went to the tribunal which was set up under the original Act, and which had not been changed in any way in the present bill. That tribunal had to consist of two medical men who were experts, not in the man's own area, and it was presided over by a barrister or a solicitor. Formerly this body reported to the Insurance Commissioners, but with the establishment of the Ministry of Health the Insurance Commissioners disappeared and became absorbed in the Ministry. There was no change in the machinery. The Minister of Health was responsible for the efficiency of the service. There was nothing to compel a medical man to go off the panel; he could go on or go off if he liked. Moreover, Parliament never intended to create a statutory vested interest. What applied to a medical man under the Insurance Act applied equally to any other man in any other department of the Ministry. It was the business of the Ministry to see that the service was well and truly rendered, and this machinery was set up to secure that in a fair way. It was a complicated machinery, but although he had been Minister of Health for more than a year, no case came up to him. It was unthinkable that a man in any section of the Government service should have an appeal to the High Court on the finding that he was not doing his duty properly.

Mr. Dennis Herbert submitted that Dr. Addison's was the most convincing speech in favour of the amendment. The object of the amendment was to get rid of a gross piece of bad management under previous Acts and sustained by the bill. If cases only of a very grave character would arise, surely the very last thing that the House ought to allow was that a man under such accusation should be deprived of the ordinary remedies of the law. Dr. Addison had said that if this amendment were carried, it would be impossible to dismiss people from other branches of the service. If he dismissed one of his clerks on an allegation of a grave offence which made him unfit to carry on the practice of the profession or business in which he was engaged, Dr. Addison would find that he would not escape the law courts. These people all had the right of appeal to the courts. The mover and seconder of the amendment put their case from the professional view-point which made it weaker.

Dr. Murray regretted very much that Dr. Addison would not agree to the amendment. He accepted the statements that the proceedings of Insurance Committees were public, but when a man chose to go before a judge and have the evidence examined, it showed that he had a very considerable belief in it, and the elementary right of such reference should not be denied to doctors on the panel. The panel practice to the majority of members of the profession was the most important part, and if they were dismissed from it their professional career was absolutely ruined. There was no desire to protect any man doing his work inefficiently or improperly, but the doctor (like any other citizen in the land) should have the security of the courts set up to protect the interests of every individual in this country.

Captain Loseby thought that there was a misapprehension in this matter. If a medical practitioner was aggrieved under common law, like any other contractor, he could have recourse to that law, and he should not have a greater right than any one else. If he were wrongly dismissed, or if the tribunal had in any way misbehaved, he had his remedy under common law in the courts.

Replying to Lieut.-Colonel Murray, Dr. Addison again defined the position. A case, he said, came up on the complaint of an insured person, and the complaint went to the Insurance Committee. The Insurance Committee then referred it to the Panel Committee, which reported their findings to the Insurance Committee.

Major Barnes said he could not believe that an amendment like this would have been supported by three medical men unless there had been some real grievance. What was asked for was that in the very rare case—a grave case as it must be—coming up there should be an appeal to the courts. That did not appear a very great thing, and he wondered why it should be denied. In the old days it was said that the King could do no wrong. In these days the Executive seemed to wish to usurp the divine right. He could understand a Minister not wishing to have an appeal against his decision, but after all, they had to consider something more important than the position or the dignity of a Minister. They had to consider the rights of individuals, and the disposition seemed to be to block the way to the courts. That had appeared over and over again during the session, but the doctrine that the Executive could do no wrong had received a nasty knock during the last few days on an appeal to the House of Lords.

Dr. Addison: There is no denial of any appeal to the courts. A doctor can appeal to the courts on the same ground as any other citizen.

Major Barnes inquired why, if there was no denial of the right, it should be resisted. It was intolerable that it should be within the power of any man, however important the department over which he presided, to block the avenues to justice.

Mr. George Roberts, in opposing the amendment, reiterated that no change whatever in the law was contemplated in the bill. He thought they might rely upon the Insurance Committees to do full justice. During the last twenty-five years he had been connected with friendly societies, and did not yet know of a complaint against a doctor under the Insurance Act. The encouragement of litigation, unless it was absolutely necessary, was objectionable. In his opinion it was unnecessary here. The medical profession was quite capable of looking after itself. It was one of the most powerfully organized professions in the land, and quite capable of seeing that no Insurance Committee, or even a Minister himself, was able to do injustice. It was not a bureaucratic body that determined this matter, but a thoroughly democratic and representative body—the Insurance Committee, acting on the advice of other medical men.

Major Farquharson said the question of the initial determination of the doctor's fault lay in the hands of a body of doctors—the Medical Service Subcommittee of the Insurance Committee of the county or county borough. This body of doctors was democratically elected by the whole body of the medical profession in the area. It very rarely happened in practice, but if it should happen that a competitor were serving upon that committee when a doctor was appearing to answer a charge, he (Major Farquharson) had sufficient faith in his profession to feel sure that such a person would withdraw from the inquiry. With regard to the Ministry of Health, it was now plausibly suggested that there should be an appeal from the Minister to a judicial tribunal. It was suggested that in a case of a breach of contract or dismissal an

action would lie. He was not prepared to advise the House on that point, but he suggested that if the Minister in the exercise of his ministerial capacity ever did a thing or caused a condition to arise as to which a doctor would be aggrieved—in the technical sense of the word—the proper place for dealing with the Minister of Health would be the House of Commons. Let the members make the Minister toe the mark and answer for his misconduct.

At this stage Captain Elliot asked permission to withdraw his amendment. He thought it was useless to go on at that hour (after one o'clock in the morning). Before this application was taken Captain Benn quoted the terms of the original Act to maintain that vested interest was created for the medical man, and that therefore Dr. Addison was wrong in contradicting Captain Elliot. If the Government was pressing conditions which the best class of men on the panel did not think fair, the best class of men would not be got to go on the panel. Mr. Myers inquired whether the delinquents amongst the members of the profession were so numerous as to make this machinery necessary.

Dr. Addison replied that he did not know of any delinquents.

Major Entwistle thought the amendment was reasonable and one that ought to be supported by the House.

Mr. Briant said the main difficulty in the Act had been to get any doctor removed at all. It was not a case of more or less exaggerated statements against the doctor, but to shift one doctor from the panel was a herculean task. No medical man need think that his reputation would be blasted by any panel of a few other medical men. The Minister of Health had been somewhat misleading the House and talking round the subject without apparently having grasped the real facts of it.

Mr. Bromfield sought to raise the question of the inadequate supply of drugs and surgical appliances to assist the doctors in their treatment, but the Deputy Speaker ruled this out of order, and the proposed clause was then negatived.

Tuberculosis Sanatoriums.

Clause 4, to discontinue sanatorium benefits under the Act of 1911 (except for Ireland) in order that separate provision might be made by the Ministry of Health, was afterwards discussed in the early hours of the morning.

Commander Kenworthy wished to leave out the discontinuing clause. In Hull it was felt that the necessary work could be done better by the existing Insurance Committee than by the Health Committee, which was overburdened with other duties.

Captain Wedgwood Benn recalled Mr. Lloyd George's confident declaration that after three or four months in a sanatorium tuberculous patients would be discharged cured.

Dr. Addison replied that a good deal had been learnt about tuberculosis since the Prime Minister's utterance ten years ago. As for what Commander Kenworthy had said, he reminded the House that such institutions as that for Hull were not provided by Insurance Committees, but by county councils. What was proposed was that one authority should be made competent to deal with all stages of tuberculosis, and it was for the benefit of the insured that the enlarged scheme was being devised.

Mr. Myers said that the defects in administration with regard to tuberculosis had been largely due to lack of funds on the part of the Insurance Committees, and lack of accommodation available from the local authorities. Domiciliary treatment had been altogether inadequate and unsatisfactory. As soon as the diagnosis of tuberculosis was made the patient should be put into the hands of the specific expert authority. He objected to practitioners of "ordinary professional skill dabbling in the tuberculin treatment."

Dr. Murray thought that the new proposals of the Government offered a very great improvement, but regretted that the discussion of so important a subject was being taken at 2.30 a.m. He disagreed with what Mr. Myers had said about the general practitioner. Early diagnosis of the disease was very difficult sometimes, but in his opinion for the most part the general practitioner was just as able to deal with tuberculosis as any of the so-called tuberculosis officers appointed under the Act.

Sir R. Thomas said Wales possessed one of the most up-to-date organizations, which had been brought unto existence by voluntary contributions as a memorial to the late King Edward. From three sources—from the insured person, from the employer, and from the State—this institution had been receiving £25,000 annually, and the concern of the Insurance Committees was where the money was to come from in future. There was nothing sufficiently definite, in his opinion, to warrant a change of system.

Lieut.-Colonel Murray and Major Entwistle said that considerable apprehension existed with regard to the intended transfer.

Dr. Addison, dealing first with a question why Ireland was not included in the scheme, pointed out that there was no medical benefit in Ireland such as obtained in England. There was a Poor Law service which worked differently, but Ireland had to be left out until an alternative system of medical services had been applied to that country. In Great Britain, in connexion with the scheme now being developed for post-sanatorium training for disabled soldiers, it was proposed to make the arrangements generally applicable. It was intended to develop the village settlement system as far as practicable, and to link the whole system up with the after-care at the end and the dispensing services at the beginning, as far as could be done, under one composite authority. The Ministry was now making a survey of village settlements as part of one comprehensive scheme, instead of dealing with it in two sections as at present.

Commander Kenworthy's amendment was then negatived.

On the motion for the third reading of the bill, Dr. Addison said the additional benefits which were the principal features were to come into operation on July 5th, and the measure had to be brought on to the Statute Book immediately. Between now and July 5th the Department had to distribute to sixteen million persons various forms, etc., and the stamps required, and the societies had to prepare their cards and do other work.

The bill was afterwards read a third time.

The bill was read a second time in the Lords on May 17th, and it was taken in Committee and read a third time in that Chamber on May 18th.

Direct Representatives of the General Medical Council Bill.

This bill was introduced in the House of Commons on May 10th by Sir Henry Craik, with the support of Captain Elliot and Lieut.-Colonel Raw.

MEMORANDUM.

Under the Medical Act, 1886, the term of office of the direct representatives on the General Medical Council is five years; but as the Act does not contain any provision by which a person elected to fill a casual vacancy should continue in office only for the residue of the term of office of his predecessor, the result has been that, instead of one general election of direct representatives being held once in five years, elections of individuals as direct representatives are continually occurring at irregular intervals. As the expenses of the election of a single representative amount almost to as much as elections of several, the burden on the General Council of expenditure on elections has been largely increased. The object of this bill is to remove this defect.

The bill also removes the obligation to fill a casual vacancy which occurs less than twelve months from the date of the next general election, and extends the time for holding an election. In many cases only one candidate is actually nominated, but the shortness of time allowed after the precept has been received from the returning officer makes it necessary to prepare for a contested election immediately, whereby a considerable expenditure is often unnecesarily incurred.

A Bill to amend section eight of the Medical Act, 1886.

BE it enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. *Term of office and elections of direct representatives on the General Council.*—Notwithstanding anything in section eight of the Medical Act, 1886—

(a) Any registered medical practitioner who, after the passing of this Act, is elected as a direct representative to fill a casual vacancy caused by the death or resignation of a direct representative shall hold office so long as the person in whose place he was elected would have held office, and no longer.

(b) Where a casual vacancy is caused by the death or resignation of a direct representative within twelve months from the time when his term of office would have expired, it shall not be necessary to fill the vacancy.

(c) The time within which elections to fill vacancies amongst the direct representatives on the General Council, whether caused by expiry of term of office, death, or resignation, are to be held shall be forty days after the receipt of the precept of the returning officer, and accordingly "forty days" shall be substituted for "twenty-one days" in subsection (3) of section eight of the Medical Act, 1886.

2. *Short Title.*—This Act may be cited as the Medical Act, 1920, and may be cited with the Medical Acts.

Naval Medical Establishments and Services.

In Committee of Supply on the Naval Estimates on May 17th, the vote was taken for a sum of £677,300 to defray medical services, including establishments at home and abroad, for year ending March 31st, 1921.

Sir Donald Maclean pointed out that while the number of officers and men of the Royal Navy had fallen from 225,000 to 126,000 there had been no corresponding reduction in the medical establishment. With a great reduction in fighting units, how was it that 3 surgeon rear admirals, 8 surgeon captains, 17 surgeon commanders, and 43 surgeon lieutenants were still required? He noticed that there was some reduction in the nursing staff—its cost had gone down from £34,300 last year to £30,700 this year; but there was a greater charge for the rear admirals whose numbers were undiminished. There was a slight increase in the charge for surgeon captains, while that for surgeon commanders had risen from £16,900 to £18,400.

Sir Thomas Bramsdon asked questions with regard to promotion for sick berth ratings, and Commander Kenworthy asked information as to the employment of hospital ships.

Sir James Craig, in reply, said that it was impossible suddenly to drop from war to peace conditions. Two

hospital ships were on hire, one attached to the Atlantic Fleet, the other to the Mediterranean; they would be replaced probably by purchase.

Viscount Curzon, who said he had noticed that in certain naval dépôts and establishments the medical staff at times had very little to do, suggested naval medical officers should be allowed to attend on the wives and children of the men.

On a further question by Sir Donald Maclean, Sir James Craig intimated that he would endeavour to clear up the particulars of the votes on report, and Mr. Long added that the figures given under Vote 3 did not constitute the total medical service vote.

Sir F. Banbury said it appeared to cost more to treat 136,000 men than to treat 280,000; it could not be said that that was owing to the increased cost of material and wages, because the comparison was with last year. For hospitals' and infirmaries' provisions and stores, medicines and instruments, the sum was £278,000 as against £232,000.

Dr. McDonald greatly regretted the opposition to the vote. He was especially sorry to hear Viscount Curzon suggest that naval medical officers should be asked to attend families and children. Other officers in the navy as well as medical men had spare time. As for the increased cost, members did not realize the enormous increase in the cost of medical and surgical appliances. Medical salaries had been increased, but not unreasonably so. Dr. Murray referred to the item "medical sustenance of seamen at sick quarters," and said that before the war surgeons had to find accommodation for seamen on land with considerable difficulty. The allowance of 2s. a day, including cost of lodging, food, and nursing, was sweating.

Mr. Acland said that when he held a responsible position at the War Office he found that there was no department in which it was more difficult to reduce expenses than the medical, except the nursing department, because doctors always had such a strong position in pointing out the fine work they did, and how essential it was they should have proper material and apparatus. That applied also to the navy.

The vote was then agreed to.

Health Conditions of Recruits.—Captain Elliot asked, on May 11th, if the War Secretary was aware that many men re-enlisted for general service were drawing pensions for wounds received in the war, and whether a man suffering from a physical disability so great that he was receiving a pension on this account should be selected to fight for his life. Mr. Churchill replied that a few men of the kind named had been re-enlisted. The majority of these were not serving in combatant units, but in specialist corps, and had not been found unfit for their duties. The regulations provided that in the case of men discharged on medical grounds applying for re-enlistment, the medical officer should consult the former discharge documents before certifying the man for re-enlistment. During the rush of recruiting last year, a few men were enlisted and subsequently found unfit for service, but steps had been taken to obviate such mistakes in the future. In view of the present position of recruiting, orders had been given that ex-soldiers receiving disability pensions were not to be re-enlisted. Captain Elliot asked if Mr. Churchill would on information look into the cases of men actually in combatant units and cavalry regiments who were in receipt of disability pensions. Mr. Churchill responded he would wish to deal with each case separately. If a man had been wounded and wished to go on in the service, and his military superiors thought he could do useful work, he should not be subjected to the same rigid examination for health as an absolutely new man. Captain Elliot inquired whether this was a question for a man's "military superiors"—was it not rather for the medical authorities, who could say whether or not a man would ultimately break down from the strain of service, though he might be perfectly fit for peace soldiering? Mr. Churchill said he did not altogether agree. In regard to recruiting for the Territorial Army, he had directed that men who had disability pensions were not for that reason—if there were no other—to be refused. There were many officers in the Army who liked the idea of continuing service with their old comrades—men who served in the Boer War and in the Great War. Dr. Murray asked if it were not the fact that pensions were granted for slight disability that did not interfere with a man's usual work. Mr. Churchill said that in some cases the pension was on account of the amount of disablement, in others the amount of suffering and injury that an individual had incurred. Replying to Mr. Houston, who alleged that new men who were physically unfit were being recruited, Mr. Churchill answered he was doing his best to stiffen the standard of recruiting. In the first instance the War Office had to take anybody that could be got. It was intended by a refining process to get rid of the men who were not physically fit.

The Value of Vaccination.—Mr. W. Thorne asked, on May 11th, whether during the past ten years fewer children had been vaccinated in England and Wales than in any previous decade; whether, during this period, there had been fewer small-pox deaths recorded than in any previous decade; and if so, whether the Minister of Health would instruct his department to publish the facts, "so that the misapprehensions of the position which were widespread in official medical circles might be removed." Dr. Addison replied that the figures were as Mr. Thorne indicated; the statistics regarding vaccination were published annually, and he was not aware of any misapprehension in official medical circles. He might point out that a consideration of these statistics without regard to other relevant facts might result in a misapprehension of the protective value of vaccination against small-pox. The matter was referred to in the 48th Annual Report of the Local Government Board (Medical Supplement), 1918–19.

Medical Service Pay.—Mr. Dennis Herbert asked, on May 11th, if the War Secretary was aware that great hardship and much discontent was being caused among members of the medical service of the Royal Air Force by the delay in payment of back pay now many months overdue. Mr. Churchill replied that the arrangements for remustering Royal Air Force medical personnel to the new rates of pay had been under preparation for some time, and the necessary order was issued last week.

The Demobilization of Medical Students.—Major Glyn, referring to a telegram issued by the War Office on March 19th, to the effect that all non-regular officers were liable to retention beyond April 30th, 1920, irrespective of whether they did or did not volunteer, asked whether this was not a reversal of the policy laid down by Mr. Churchill on February 23rd, when he said that all such officers would be demobilized by the end of April. Major Glyn said he raised the matter especially in the interests of medical students retained in Mesopotamia who wanted to continue their studies at home. Mr. Churchill regretted that he was unable to take any exceptional action in the case of medical students. Officers held their commissions during His Majesty's pleasure, and they were liable to be retained in the following circumstances: when they filled an appointment within an authorized establishment; when no regular officers were available to replace them; and when it was impossible to dispense with their services without relief. Every effort, however, was being made to replace temporary officers.

Medical Conditions of Service in India.—Replying to Sir W. Joynson-Hicks, Mr. Montagu stated, on May 12th, that in 1914 the number of officers in the Indian Medical Service was 706 Europeans and 63 Indians. In December, 1919, excluding officers holding temporary commissions, there were 650 Europeans and 80 Indians. During 1919 twenty-five Europeans and twenty-one Indians were appointed to permanent commissions. In amplification of improvements already sanctioned he hoped to announce at an early date increased rates of pay and pension for the Indian Medical Service. He recognized also that it was essential to improve the facilities for leave and study, but no decision on these points could be effective until recruiting had brought the service nearer to its normal strength. Mr. Montagu added that he hoped to be able to state decisions within a few weeks.

Travelling Facilities for Men under Treatment.—Major Tryon announced, on May 11th, new regulations for travelling facilities for ex-service men under medical treatment away from home. Under the present regulations a man under treatment away from home may be provided with a free railway ticket after six months, and a further free ticket for each subsequent six months' treatment. In future, four half-fare vouchers may be substituted for two free tickets, and the man under treatment for less than six months will thus be able to visit his home at half fare after three months. Men under treatment in the convalescent centres will be allowed three free tickets or six half-fare vouchers instead of four and two respectively.

British Soldiers in France and Germany.—Replying to Captain Elliot, on May 11th, Mr. Churchill said he was aware that there had been a rise in the incidence of venereal disease amongst the troops in France and Germany since the armistice. The subject had been receiving anxious consideration for some months, and he was satisfied that the authorities on the spot were taking all possible steps to combat it.

The Treatment of Tuberculous Soldiers.—Dr. Addison, on May 12th, announced that the Ministry of Health had come to decisions on the report of the Interdepartmental Committee on tuberculous soldiers. The capital grant-in-aid for the provision of additional sanatorium and hospital accommodation had been increased to £180 a bed, and considerable extensions of the existing accommodation were being made. Facilities for the training in suitable occupations of ex-service men suffering from tuberculosis were being provided at existing sanatoriums at an estimated cost of £250,000; and a scheme for the provision of village settlements for these men and their families had been worked out, and was now under consideration by the departments concerned.

Answers in Brief.

The total number of persons employed by the Ministry of Health on May 1st, including the staff of the Welsh Board of Health, was 5,825, of whom 3,452 were on a temporary basis.

Mr. Bridgeman, on May 12th, stated that any person who could obtain a medical certificate that coal was needed in a case of illness could get from a merchant a supply forthwith.

Sir Archibald Williamson has stated that R.A.M.C. officers are detailed for service overseas in accordance with a foreign service roster, except in the case of an officer who, on account of special qualification, is required in the United Kingdom. When an officer who had completed a tour of service in India became due for foreign service every endeavour was made to post him to a colony. Due consideration was given to service in theatres of war other than France and Italy.

Sir Robert Horne has stated that he is aware of only three factories in Great Britain producing morphine. When the Dangerous Drugs Bill is passed into law, control over such factories will be exercised in accordance with the provisions of the Opium Convention. Licences are at present granted by the Board of Trade for exports of morphine on the basis of the legitimate requirements of the country of destination.

Sir Robert Horne has promised a statistical statement as to the quantity and quality of condensed milk imported into this country.

Scotland.

POST-GRADUATE MEDICAL TEACHING IN GLASGOW.

FOR many years before the war post-graduate courses in medicine had been conducted at several of the Glasgow hospitals, but there was no organized scheme whereby the teaching in the different hospitals might be correlated. Early in 1914, at the request of the medical faculty of the university, a meeting of the medical staffs of the university and other medical schools and of the general and special hospitals of Glasgow was convened, and a committee was appointed to promote co-operation between the various bodies concerned with the purpose of instituting a general scheme of post-graduate medical teaching. The scheme, however, fell into abeyance on the outbreak of war in August, 1914, and nothing further was done until February, 1919, when an emergency course for the ensuing summer session was instituted, partly to meet the needs of graduates who had been on service. This course was repeated in the autumn, and comprised clinical classes in medicine, surgery, tuberculosis, and other special subjects, as well as evening demonstrations in diseases of the nose, throat, and ear. Eighty-six graduates attended; the majority were officers or ex-officers of the navy or army, but a number of local practitioners also availed themselves of the opportunity of refreshing their knowledge in the classes.

In December, 1919, a conjoint meeting of the medical faculty of the University and the general committee was held, in order to consider the results of the emergency classes, and to discuss the further organization of post-graduate teaching in Glasgow; as a result a special sub-committee was appointed to formulate a permanent scheme. This scheme was unanimously approved at a conjoint meeting held in the University, on March 2nd, under the chairmanship of Principal Sir Donald MacAlister, K.C.B. It is recommended that for the purpose of arranging, co-ordinating, and administering post-graduate medical teaching in Glasgow and the West of Scotland a central body shall be formed under the title of the Glasgow Post-Graduate Medical Association. The governing board is to consist of ten representatives of those institutions granting facilities for post-graduate teaching, and eight representatives of the teachers who have taken part in the post-graduate teaching in either of the two years preceding the year of election. It is recommended that the following courses be arranged: (1) "Refresher" courses for the general practitioner, to be held twice a year, and to last four to six weeks; (2) weekly demonstrations for local practitioners, to be held one afternoon a week, the summer months excluded; demonstrations of an hour and a half's duration are to be given by different members of the teaching staff; (3) advanced and comprehensive courses intended particularly for those desirous of qualifying specially in one or more subjects. These courses are to occupy the full time of the practitioner, and to be of not less than six months' duration. The committee consider that medical practitioners who attend such courses and show proficiency in the subjects studied should be able to obtain suitable recognition of their work, in the form either of a diploma conferred by the university or of a special certificate granted by the Post-Graduate Association. Courses in venereal diseases, tuberculosis, obstetrics and child welfare, and school medical inspection and hygiene, should be instituted as soon as possible. It is suggested also that the Post-Graduate Association should make known the facilities offered for research workers in medical subjects, and be the means of introducing suitable workers from other parts. Fees should be charged for all teaching, and the practicability of obtaining direct or indirect financial assistance from the Government should be considered.

SMALL-POX IN SCOTLAND.

Cases of small-pox continue to occur in Glasgow, and at the end of last week 116 were under treatment in Belvidere Hospital. A case has occurred also at Paisley and another at Dundee. The Glasgow Health Committee has approved the arrangement for the offer of free vaccination to all persons, has invited insured persons to go to their panel doctors (the cost of vaccination being borne by the corporation), and has agreed to pay a fee of 2s. 6d. to doctors in respect of non-insured persons. Dr. A. K. Chalmers, M.O.H. Glasgow, held a conference with representatives of the medical profession at which a proposal to institute a house-to-house visitation in the east end of Glasgow was discussed. Dr. Glen, Secretary of the Glasgow Division of the British Medical Association, said that medical practitioners had undertaken to note the names and addresses of the insured persons they vaccinated. As regards others, doctors were asked to inform the medical officer of health of all vaccinations.

The Royal Faculty of Physicians and Surgeons of Glasgow has issued a memorandum to the public on the value of vaccination in which the opinion of the Royal Commission of 1889 is set out. That Commission found that vaccination diminishes liability to attack and renders the disease if contracted less fatal and of milder type, but that its effect gradually diminishes, so that revaccination is required to restore the protection after a period of nine or ten years. The memorandum goes on to recall that the value of effective recent vaccination was amply illustrated during the prevalence of the disease in Glasgow, which began in 1900. Early in the following year the Health Committee offered free vaccination; ultimately over 4,000 persons made use of the offer, and not one case of small-pox occurred among them; 1,800 cases which did occur were all in persons who did not accept the offer. The experience of the small-pox hospital is quoted also. The medical and surgical staff numbered eighty; all were efficiently vaccinated and none contracted the disease, and the same was true of fifty hospital servants. Further, over 150 practitioners and students of medicine visited the hospital; all were vaccinated beforehand and none contracted the infection. During the outbreak it became necessary to extend the hospital, and 230 workmen were employed; 217 accepted revaccination and none contracted the disease. Of the 13 who refused or for some reason were not recently revaccinated, 5 contracted the disease and 1 died.

Ireland.

THE LATE DR. SPELMAN, OF DUNMORE, CO. GALWAY.

IT was stated in a letter which we printed last week that a fund has been opened for the relief of the widow and two young children of Dr. A. P. Spelman, who was killed by the skidding of his motor car as he returned from a professional call. Subscriptions may be sent to Dr. P. J. Delaney, Claremorris, co. Mayo, or to Dr. Heneghan, Ballindine, co. Mayo. Dr. Spelman was only 26 years of age, and his widow and two young children are left totally unprovided for. It is a case that should make special appeal to the generosity of the medical profession.

England and Wales.

THE BLACK SMOKE TAX.

THE Manchester City Council has for years been seriously concerned about the excessive smokiness of the air in that town, and in our issue of July 11th, 1914, we described the appointment of an air pollution advisory board. The conclusions reached by the statistical subcommittee of the board have been published in a pamphlet with the title of *The Black Smoke Tax*. One of the chief endeavours of the committee was to estimate as precisely as possible the actual monetary loss caused to the town by undue smokiness of the air. A member of the staff of the Public Health Department who made a comparative investigation of the cost of the weekly washing in similar working-class households in Manchester and Harrogate respectively found that in Manchester the average cost of soap, starch, and other materials was 50 per cent. greater, and the average cost of fuel 30 per cent. greater; material and fuel together cost 7½d. a week per household more in Manchester. This difference amounts to £183,000 per annum in working-class houses where the washing is done at home. In middle-class homes where the washing is partially or wholly sent out the additional cost is larger, and includes expenditure on collection, labour, and laundry profits; but if these costs are ignored, and the outlay for the material and fuel is calculated at the same rate as in poorer households, the total expenditure in Manchester is £242,702 per annum

greater than it would be in a city of the same size as Manchester but of the same degree of atmospheric cleanliness as Harrogate. These calculations have been verified by a firm of auditors. The committee's estimates of other sources of loss through smokiness have of necessity been made with less precision; but as a result of careful inquiries from hospital superintendents, architects, property owners, hotel proprietors, and manufacturers, they conclude that excessive smoke pollution costs Manchester at least three-quarters of a million a year. To expend much thought and money on measures that would reduce this "smoke tax" is regarded by the committee as a sound business expedient. It appears from the Manchester figures that the estimate of £1 per head made by the Hon. Rollo Russell for the London area was well within the mark; comparison may also be made with the Industrial Research Department's inquiry at Pittsburg, where the estimated loss through smoke pollution was £4 a head. These economic conclusions should be collated with the well known work of Professor Cohen and Mr. Ruston[1] (who studied from the scientific side the effects of excessive smoke production); together they deserve the serious attention of urban authorities. An abortive Smoke Abatement Bill was introduced into the House of Lords in 1914; since that time the matter received little national notice until the appointment, recorded in our issue of February 28th of this year, by the Ministry of Health of a Smoke Abatement Committee, with Lord Newton as chairman.

OPENING OF DEPARTMENT OF PATHOLOGY AT SWANSEA.

On May 7th the Beck Laboratory at the Swansea General and Eye Hospital, founded mainly through the generosity of Mr. Roger Beck, was formally opened by Sir George Makins, G.C.M.G., C.B., President of the Royal College of Surgeons. Mr. Beck's name is a household word in the town of Swansea wherever wise beneficence is concerned; the medical profession at large is also indebted to him as founder of the Marcus Beck Laboratory at the Royal Society of Medicine. The two principal working rooms of the Beck Laboratory have been named respectively the Brook Room and the Lancaster Room, in acknowledgement of the practical aid given by Mr. W. F. Brook and Dr. Lancaster, of the hospital staff, towards the establishing of the new department. The laboratory consists of four rooms placed on the first floor, and is equipped for all types of clinical pathological work, including chemical pathology. When necessary the department can readily be expanded by taking over rooms on the ground floor of the present building. The animal house is conveniently placed within a few yards, and the *post-mortem* room is also in close proximity.

The department has been in working order for a year, and clinical pathological work is being done for the Swansea Hospital, various public health authorities, and for practitioners of the district. It is intended to develop the laboratory as a centre of inquiry and research as soon as the necessary expansion of the working staff has been effected. The department has been under the direction of Dr. A. F. Sladden from its initiation.

At the opening ceremony, at which there was a large attendance, Sir George Makins gave an address on the growth of clinical laboratories during the past fifty years. He instanced some of the advantages derived during the war from the close association of clinicians with laboratory workers, and emphasized the importance of the clinical laboratory as the link uniting the science with the art of medicine. Sir George Makins was followed by Professor Hepburn, Dean of the Welsh National School of Medicine, who with subsequent speakers expressed appreciation of the generous and far-seeing spirit which has actuated Mr. Beck. Mr. Beck, in reply, happily described the department he has founded as a "first aid" to the profession of Swansea and the district.

In the evening the honorary medical staff of the hospital gave a complimentary dinner to Sir George Makins and Mr. Roger Beck; it was very well attended by medical men and their friends, and was presided over by Dr. A. W. Cameron. The Laboratory, the two guests of the evening, and the Swansea General Hospital were all heartily toasted, the gathering being especially delighted by the toast of the staff's two guests, proposed with felicitous phrasing and dignity by Dr. Lancaster.

[1] *Smoke: A Study of Town Air.* London: E. Arnold. 1912. 5s.

Correspondence.

STERILIZATION OF MILK BY ELECTRICITY.

SIR,—In the extremely fair note on "The Sterilization of Milk by Electricity," which appeared in your issue of May 15th, p. 632, it is stated that the work was started in 1914. This is not correct, as the work was in progress when I came to Liverpool at the end of 1912. A certain degree of success had been obtained, and when, at the request of the Health Committee of the city, I presented a report on the work, I was able to state that it gave "promise of success." There was at this period definite evidence that, without obvious change in its constitution, the milk had been freed from *B. coli*, but there was no satisfactory evidence that *B. tuberculosis* had been destroyed. The control and other experiments were, in my opinion, far too limited and the conditions under which the work had been done too unsatisfactory to justify any conclusions as to success or failure. As a result of my report a plant was erected in my department, and I was asked to carry on further investigations. This was my first connexion with the actual experimental stage, and I was fortunate in having Mr. F. C. Lewis, who had been in close association with the previous work, attached to my laboratory staff. Thus we were able to avoid the repetition of methods of experimentation which had given unsatisfactory results and to concentrate on those which had given promise of success.

Work on sterilization of fluids by electrical action had been recorded many years before this work was started, but the credit of initiating the work along the special lines recorded in the monograph by the Medical Research Committee must be given not to me but to the earlier workers in 1911 and 1912.—I am, etc.,

Liverpool, May 15th. J. M. BEATTIE.

EXPERIMENTAL INDUCTION OF CANCER.

SIR,—Apropos the leading article in your issue of May 15th, page 680, concerning Professor Fibiger's work on carcinoma in rats, the late Professor H. G. Plimmer told me in 1917 that five wallabies at the London Zoological Gardens, confined in the same pen, had died of this disease. In four of these, all affected in the same year, it was primary in the stomach. These animals, so I was informed by the keeper, are fed on oats, cabbages, and a little bran. If I am not mistaken, Professor Plimmer said that the primary growth was by far most commonly gastric, in his experience of the animals in this collection which died of carcinoma. I found other curious cases among his records, but was unable to pursue the matter further. In view, however, of the strong suspicion entertained by many besides Sir John Bland-Sutton, that carcinoma in man is the result of an infection, in most cases via the alimentary tract, I would suggest that the incidence of carcinoma among animals kept in captivity is a subject which might well reward a searching inquiry.—I am, etc.,

Liverpool, May 17th. EDMUND HUGHES.

EPIDEMIC ENCEPHALITIS.

SIR,—I have read with much interest Dr. Hubert Phillips's admirable note in the BRITISH MEDICAL JOURNAL of May 8th on his case of encephalitis with myoclonus. I am sure, however, that he will accept a correction from me on one point of some small importance. My examination of the cerebro-spinal fluid showed 40 cells per c.mm., these being almost exclusively small lymphocytes.

In the earlier cases of this disease which were published a normal cell count was, I believe, generally recorded; several reporters of late, however, have found a slight lymphocytic increase. A blood count made on Dr. Phillips's patient at the same time showed nearly normal proportions—namely, 5 million red cells and 8,100 leucocytes, of which 80 per cent. were polymorphs, and only 15.25 per cent. lymphocytes.—I am, etc.,

Swansea, May 12th. ARTHUR F. SLADDEN, D.M.Oxon.

"A PLEA FOR THE TONSILS."

SIR,—It might occur to your readers, after perusing Professor Berry's letter in your issue of February 7th, that his work on the subject had been overlooked in my

book *Immunity in Health*. Professor Berry had not seen the book when he wrote. As a matter of fact, his very valuable researches on the lymphoid tissue of the caecal apex are referred to in a number of places in the text, and indeed serve as a basis of some of the conclusions arrived at.—I am, etc.,

KENELM H. DIGBY,
Professor of Clinical Surgery.

University of Hong Kong,
March 30th.

WAR REWARDS.

SIR,—It seems to me that some alteration should be made in the rewards given out by the War Office. I know a medical man who had first of all served in the Royal Naval Artillery Volunteers and then in the Royal Engineers (Submarine Miners), and who enrolled at once as an *à la suite* officer when Lord Haldane's scheme was formulated. This man on August 6th, 1914, in reply to urgent requests for enrolments, sent a letter to the War Office to say that he was anxious to undertake any service abroad that he could possibly get. He has a good knowledge both of French and German. The usual reply came that a note of the offer had been made, and there the matter rested till he was called up for *à la suite* service in May, 1915. He was classed C 1, and consequently kept at his *à la suite* post all through the war, although he made every effort to get away; not only so, but in addition to these duties he gave assistance voluntarily and without any remuneration for a whole year at the examination of recruits. He began his work in the morning with recruits, went to the military hospital about 1 o'clock, and returned to his house about 7 at night, and during that whole year he had not a single day's leave of absence except three days for a trifling operation. The strenuous times caused him to resign a teaching post of some considerable value, and also a post which he held under the corporation of the town in which he lived. The monetary losses in that respect might be put down at a couple of hundred pounds per annum, and these losses are permanent.

When he resigned his teaching appointment it was advertised, and a young practitioner in the same line of specialism applied for it and got it. This man was of medical military age. I am not aware that he had ever done any military service. Ultimately, however, when conscription came in he was compelled to join up, and thus a man who apparently had never the slightest intention of crossing his own doorstep for military service now goes about as one of the patriots entitled to the Overseas medal. The man who gave up these appointments, who saw something like 1,700 recruits in a year without a penny of payment, and who in his early days did some volunteer service, gets nothing, while a young man who did not join up till he was compelled to gets a reward. Is there any sense in such arrangements? Surely it is more patriotic to use every effort to get abroad in the service of your country than to remain at your own fireside till the recruiting officer compels you to join up. Not only did the man above mentioned get nothing for his examination of recruits, but as he was in a home station all his allowances were cut off. The hospital in which he served was situated some three miles from his dwelling, and these allowances came in handy as they helped to pay the taxis. Surely it would have been only fair to have given full allowances to a man who was doing, at any rate, nine or ten hours' work every day in a double capacity, first as an *à la suite* officer, for which he got his ordinary pay; secondly, as one of the staff of the Recruiting Boards, for which he got nothing, but which involved him in considerable expense for the hire of taxis.—I am, etc.,

X. Y. Z.

Glasgow, April 30th.

THE salaries of the professors of the Paris Faculty of Medicine have been raised retrospectively from July 1st, 1919. The professors have been placed in two classes according to their seniority, those in the first class receiving a salary of 25,000 francs and those in the second class a salary of 23,000 francs. By a recent Ministerial decree Professors Richet, Pouchet, Hutinel, De Lapersonne, Gilbert, Roger, Nicolas, Ribemont-Dessaignes, Quénu, Prénant, Widal, Chauffard, and Weiss have been put in the first class, and Professors Delbet, Marfan, Hartmann, Bar, Marie, Broca, Teissier, Desgrès, Lejars, Achard, Robin, Legueu, Letulle, Couvelaire, Carnot, Besançon, Vaquez, Dupré, and Jeanselme in the second class.

Obituary.

SIR KENDAL FRANKS, C.B., M.D., F.R.C.S.I.

THE death of Sir Kendal Franks at Johannesburg, which has been announced in the public press, will cause much sorrow and regret amongst his many—and he had very many—friends both in the United Kingdom and in South Africa.

Kendal Mathew St. John Franks was born on February 8th, 1851, at Jerpoint Hill, co. Kilkenny, and was the fourth son of Robert F. Franks and Henrietta, daughter of the Right Hon. Charles Kendal Bushe, Lord Chief Justice of Ireland. He was a distinguished graduate of the University of Dublin, in which he obtained first-class honours in mathematics and a scholarship. As a medical undergraduate he was also awarded a gold medal by the Dublin Pathological Society for an essay on "Injuries and diseases of articular cartilage." He graduated A.B. in 1872, M.B. 1873, and M.D. in 1876. He took out the licence of the Royal College of Surgeons, Ireland, in 1875, and the Fellowship in 1879, and held the position of senior demonstrator of anatomy in the school attached to the College for some years. Shortly after graduation he was appointed surgeon to the Throat and Ear Hospital, and subsequently to the Adelaide Hospital, of which he was for some years the senior surgeon. He was also an examiner in surgery in the University of Dublin, and consulting medical officer to the London and North-Western Railway in Dublin. He was an able surgeon and brilliant operator as well as a popular teacher, and soon gained a large and profitable private practice. During the viceroyalty of the Marquis of Zetland he was appointed surgeon-in-ordinary to the Lord Lieutenant.

He was a fellow of many medical and other learned societies, including the Royal Medico-Chirurgical Society, and was a member of the Surgical Council of the Royal Academy of Medicine in Ireland. He was the author of many valuable contributions to medical literature, including an article on "Movable kidney" in the *Twentieth Century Practice of Medicine*, vol. ix; on "Cholecystotomy" and on "Cases of enterectomy and enterorrhaphy" in the *Transactions* of the Royal Academy of Medicine, Ireland (1889–1893).

He married in 1879 Charlotte Selina, daughter of Richard Greene, Esq.; she died in 1881. In 1885 he married Gertrude Jane, daughter of Lieut.-Colonel Bromhead Butt, 79th Regiment; she died in 1896, leaving three sons and one daughter. In 1906 he was elected vice-president of the Royal College of Surgeons in Ireland, but in the same year, and before he had been long in office, he determined, in consequence of the serious ill health of his wife, to emigrate to South Africa. There he rapidly developed a large consulting practice and was appointed honorary consulting surgeon to the Johannesburg Hospital. During the South African war he was appointed consulting surgeon to H.M. Forces, and for his conspicuous services was thrice mentioned in dispatches and in 1900 received the C.B. He was knighted in 1904.

Sir Kendal Franks was remarkable not only for his professional attainments but also for his broad mental culture and artistic taste; his skill as an artist in water-colour, which he inherited from his mother, was of no mean order. But he especially excelled in those social qualities which endeared him to so many devoted friends—a genial optimism and extraordinary enthusiasm even in trifling matters, and never-failing sympathy. He was indeed a man.

W. J. S.

THE announcement of the sudden death of Dr. J. H. FULLARTON will cause much regret in many quarters. Glasgow graduates who can recall the early eighties will remember him as a brilliant student of biological science and the winner of prizes and scholarships. He graduated B.Sc. in 1880 and D.Sc. in 1891. For some years he was assistant to the late Professor John Young, and afterwards was appointed as examiner in biology in the university. During a number of years he devoted himself to scientific and practical zoological studies, and was zoologist and superintendent of the Fisheries Marine Laboratory, H.M. Fishery Board for Scotland. In this department his published work gained general recognition, and he was

elected an honorary member of many foreign biological societies. Later he decided to enter on the practice of medicine, and he qualified at the Scottish colleges in 1906. In the West End of London he gained a considerable measure of success, although he came somewhat late in life to the anxieties and strain of practice. Nor could science and medicine wholly content him. Always a man of decided views, he in recent years became active in political work, and only a few weeks before his death was engaged in an active campaign in a Scottish by-election. To all his work, as well as to his leisure, he brought heartiness, energy, and comradeship, and many who knew nothing of his scientific attainments will always remember him as a man and a brother. At his own request his remains are to be interred in the Island of Arran, his native home, to which he was dearly attached.

SURGEON-MAJOR-GENERAL HENRY FOLJAMBE PATERSON, Army Medical Service (retired), died in London on May 11th, aged 83. He was born at Ballater, Aberdeenshire, on July 9th, 1836, and educated at Marischal College, Aberdeen, where he graduated M.D. in 1858; he took the M.R.C.S.Ed. in 1857 and the F.R.C.S.Ed. in 1866. Entering the army as assistant surgeon on October 19th, 1857, he became deputy surgeon-general in 1888, and S.M.G. in 1893, retiring on July 9th, 1896. In the regimental days he spent the first sixteen years of his service in the Royal Artillery. He had held the post of P.M.O. at Hong Kong, Malta, and Aldershot. He took great interest in the work of the British Medical Association, and assisted in the formation of the Hong Kong and China Branch in 1891, and was appointed its first president. In his address on retiring from that office he referred to the British Medical Association as "the grandest medical brotherhood the world had ever seen."

WE regret to report the death of Dr. WILLIAM STEWART, M.O.H. Gourock, which occurred from pneumonia, on April 8th, at the age of 58. Dr. Stewart was educated at Glasgow University, where he graduated M.B., C.M. in 1889; some years later he took the D.P.H. He began practice in the Dennistoun district of Glasgow, but after two years removed to Gourock, where he soon acquired an extensive practice. He was medical officer of health for over twenty years, and took a leading part in the many public health improvements of the burgh. He was also police surgeon and ambulance instructor to the Caledonian Railway Company. During the war Dr. Stewart was called upon greatly to exceed the limits of his strength. Deeply conscientious and of a retiring nature, his services were always available. When the end came he was mourned by the whole community. He leaves a widow and one daughter; his only son was killed on active service in Gallipoli.

WE regret to record the death of Dr. PETER BURROWES KELLY, D.S.O. Dr. Kelly was born in Ireland and received his medical education first in Dublin, where he obtained a medal for chemistry, histology, and medicine, and later at St. Bartholomew's and Charing Cross Hospitals. He obtained the diplomas L.R.C.P.I., L.R.C.S.I., and L.M. in 1911. He joined the Royal Navy on August 4th, 1914, and served first at Antwerp. He volunteered for service on H.M. transport *River Clyde*, the ship which was run ashore at Gallipoli to facilitate the landing of troops, and although wounded in the foot continued to attend the injured; for this and other gallant services he was awarded the D.S.O. He served in Gallipoli until the army was withdrawn. His last appointment was at the Royal Naval College at Osborne, and worked very hard during a severe epidemic which prevailed there. Immediately after leaving, and without any interval of rest, he commenced civil practice in London, but his health rapidly declined, and he died on April 6th at the residence of his brother, Dr. J. Kelly, of Ballytore, co. Kildare. He leaves a widow and one child.

ONE hundred and forty-one cases of gonorrhoea (sixteen in females) and thirty-one of syphilis (eleven in females) were notified to the Public Health Department of Western Australia during the last quarter of 1919.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on May 8th the following medical degrees were conferred:

M.D.—W. B. G. Angus.
M.B., B.CH.—W. E. H. Bull.
M.B.—B. Haigh, R. T. Raine.

UNIVERSITY OF GLASGOW.

THE Senate of the University of Glasgow has resolved to confer the honorary degree of Doctor of Laws upon Sir Robert W. Philip, Professor of Tuberculosis, Edinburgh University, and President of the Royal College of Physicians of Edinburgh; and on Dr. John Macintyre, F.R.S.Edin., Surgeon for Diseases of the Throat and Nose, Glasgow Royal Infirmary, and lecturer on this subject in the University of Glasgow.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary comitia of the Royal College of Physicians of London was held on May 13th.

The President, Sir Norman Moore, nominated Dr. James Taylor to be the representative of the College on a committee being formed by the Minister of Health to investigate the causes of blindness and defective vision.

The following gentlemen elected to the Fellowship at the last meeting were admitted Fellows of the College:

William Francis Menzies, M.D.Edin.; James Graham Forbes, M.D.Camb.; William Morton Robson, M.D.Lond.; Samuel Ernest Dore, M.D.Camb.; George Basil Price, M.D Lond.; Albert Ramsbottom, M.D.Vict.; Arthur Stanley Woodwark, M.D.Lond.; Francis Graham Crookshank, M.D.Lond.; Arthur Charles Douglas Firth, M.D.Camb.; Nathan Mutch, M.D.Camb.; Francis Martin Rouse Walshe, M.D.Lond.; George Graham, M.D Camb.; George Ernest Beaumont, M.B.Oxford.

Diplomas in Public Health were granted to the following candidates, jointly with the Royal College of Surgeons:

Eleanor E. Bourne, M. A. C. Buckell, J. N. Dobbie, H. Evans, G. A. D. Harvey, G. D. Jameson, W. Simpson, J. G. Wallis, G. S. Wilson.

Diplomas in Tropical Medicine and Hygiene were granted to the following candidates, jointly with the Royal College of Surgeons:

M. K. Abdel-Khalik, J. S. Armstrong, C. Basile, A. K. Cosgrave, E. Forrester-Paton, J. A. Frendo, W. P. Hogg, T. S. Keith, A. W. M. Harvey, N. Nedergaard, H. E. Whittingham, Man Wong, E. J. Wood.

The President then dissolved the Comitia.

The Services.

R.A.M.C. COMMISSIONS.

THE War Office announces that a limited number of commissions in the Regular Royal Army Medical Corps will be given at an early date to officers who are at present serving in the army or who have held commissioned rank during the war. Intending candidates, who will be required to fulfil the undermentioned conditions, should write for forms of application and further particulars to the Secretary, War Office (A.M.D.1), Cornwall House, Stamford Street, London, S.E.1. Officers who are still serving should submit their applications through the usual official channels.

Conditions.

1. Candidates must be registered under the Medical Acts now in force in the United Kingdom.

2. They must be under 29 years of age. Previous commissioned service, if as a medical officer of the Royal Army Medical Corps, will count towards seniority promotion and retired pay. Commissioned service other than as a medical officer will count only towards retired pay. The period of any such service may be deducted from an applicant's age if this is over 28 years.

3. They must be pronounced fit for general service by a military medical board.

The rates of pay are as laid down in Army Order 324, an extract from which is appended:

Army Medical Service.

	Per day. £ s. d.
Major-General	4 10 0
Colonel	3 5 0
Lieut.-Colonel	2 10 0
Lieut.-Colonel, after 20 years' total service	2 12 6
Lieut.-Colonel, after 25 years' total service	2 15 0
Major	1 15 0
Major, after 15 years' total service	2 0 0
Captain	1 5 0
Captain, after 5 years' total service	1 7 6
Captain, after 10 years' total service	1 10 0
Captain, holding higher rank by brevet, in addition	0 2 0
Lieutenant	1 0 0

The rates of allowances, gratuity, retired pay, etc., will be communicated to intending candidates.

AMERICAN SURGEONS MENTIONED IN DISPATCHES. THE *Journal of the American Medical Association* announces that King George has ordered certificates to be awarded to Colonels Christopher C. Collins; George W. Crile, Cleveland; Harvey Cushing, Boston; Mathew A. Delaney; Robert U. Patterson; Harry L. Gilchrist; James D. Fife; Richard H. Harte, Philadelphia; and Lieut.-Colonel Lucius L. Hopwood, M.C., U.S. Army; and to Miss Julia Stimson, Superintendent of the Nurses of the Medical Department, U.S. Army. The certificate is as follows:

The war of 1914–1918. U.S. Army Medical Corps (name of recipient) was mentioned in a dispatch from Field Marshal Sir Douglas Haig, Kt., G.C.B., G.C.V.O., K.C.B.E., dated November 7th, 1917, for gallant and distinguished services in the field. I have it in command from the King to record His Majesty's high appreciation of the services rendered.

WINSTON S. CHURCHILL, Secretary of State for War.

War Office, Whitehall, S.W., March 1st, 1919.

Medical News.

THE next session of the General Medical Council will commence at 2 p.m. on Tuesday, June 1st, when the President, Sir Donald MacAlister, K.C.B., M.D., will take the chair and give an address.

DR. J. STRICKLAND GOODALL, on his retirement from the lectureship in physiology and biology at Middlesex Hospital, held by him for seventeen years, has received a presentation subscribed for by past and present students.

THE President of the French Republic has conferred the honour of Officer of the Legion of Honour on Dr. Aldo Castellani, C.M.G., of the London School of Tropical Medicine, for his method of combined typhoid-paratyphoid and enteric-cholera vaccination, the early descriptions of which were published in our columns, and other work found of utility to the allied armies during the war.

AT the meeting of the Medico-Legal Society to be held at 11, Chandos Street, Cavendish Square, on Friday, May 28th, at 8.30 p.m., Dr. T. H. G. Shore will read a paper on sudden deaths on active service.

DR. DAVID J. GIBBS WISHART has been elected president of the Aesculapian Club, Toronto; Dr. Alexander Primrose, C.B., vice-president; Dr. Edmund E. King, treasurer (re-elected); and Dr. Frederick C. Harrison, secretary.

THE Glasgow University Club, London, will dine at the Holborn Restaurant on Friday, June 4th, at 7.30 p.m., when the Right Hon. A. Bonar Law, M.P., Lord Privy Seal, Lord Rector of the University, will be in the chair.

DR. LATARJET has been appointed professor of anatomy in the University of Lyons to replace Dr. Testut, who has retired.

AT a recent meeting the council of the Chicago Medical Society adopted a new scale of fees, increased by 50 per cent.

THE village of Athens (New York) has embodied in its sanitary code a regulation providing that no corporation, association, firm, or individual other than licensed pharmacists and physicians shall sell or offer for sale in the village any medicine or so-called medical appliances without a permit from the local health officer.

THE ninth annual general meeting and conference of the British Waterworks Association will be held at Nottingham on July 1st, when the manager of the Sheffield Waterworks will describe the scheme of pumping water from the River Don in substitution for the statutory compensation water, and the interim report of the Water Power Resources Committee will be discussed.

IN response to the appeal of the University of Liverpool, Mr. T. Harrison Hughes, of Liverpool, has contributed £50,000, and Messrs. Alfred Holt and Co. (Liverpool) £15,000. The Association of West African Merchants and the African Section of the Chamber of Commerce, Liverpool, have asked members of the section to subscribe voluntarily at least £12,000 on the condition that the contribution shall be earmarked for some object which bears a relation to the West African trade.

THE second edition of the *Oxford University Press General Catalogue*, complete up to the end of 1919, gives an account of each of the books published and on sale, arranged in six sections according to the nature of their contents, and occurring again in an alphabetical list at the end of the general list. Many excellent textbooks of medicine, surgery, and allied subjects are published by the press.

MORE than 6,000 cases of small-pox have recently occurred in the north-east of Bohemia.

THE Genoese medical journal, *Liguria Medica*, which suspended publication in May, 1915, has reappeared.

IT is proposed to establish a course of stomatology at the University of Liège and a course of psychiatry at the University of Ghent.

THE chairman of the Board of Licence Commissioners of Ontario has informed a committee of the legislature that 80 per cent. of Ontario physicians write less than ten prescriptions for liquor in a month.

A RIOT recently occurred at the University of La Plata (Argentina) between the professors and the students. A medical student, who was taking his examination, was killed by a revolver shot.

THERE are a few vacancies for the third post-graduate course of instruction in the diagnosis and treatment of venereal diseases by Mr. K. M. Walker at the St. Bartholomew's Hospital Clinic, Golden Lane, E.C., established by the Corporation of London. The course will be held on Thursday afternoons at 5.30 p.m. Medical men wishing to attend should write to the Secretary, National Council for Combating Venereal Diseases, 80, Avenue Chambers, Vernon Place, Southampton Row, W.C.1.

A DEPUTATION from the Society for the Prevention of Venereal Disease laid the views of the society before members of Parliament interested in the subject in Committee Room No. 7 of the House of Commons on May 12th. The policy of the society that venereal disease can be easily prevented by immediate self-disinfection within an hour of exposure to risk, was presented by Lord Willoughby de Broke (President), Sir James Crichton-Browne, Sir William Arbuthnot Lane, Miss Norah March, and Dr. Mearns Fraser. At the conclusion of the meeting the members of Parliament present resolved unanimously to form themselves into a Parliamentary Committee with the object of furthering the aims of the society, more particularly in endeavouring to obtain the support, both official and financial, of the Ministry of Health for the society's work; and of obtaining the repeal of the clause in the Venereal Disease Act, 1917, which forbids a chemist to recommend to the public or to expose for sale approved disinfectants for the prevention of venereal disease.

THE third annual report of the Conjoint Board of Scientific Societies shows that the total number of constituent bodies is now 57. Among them are the Royal College of Physicians of London and the Royal College of Surgeons of England, the Royal Society of Medicine, the Physiological Society, the Biochemical Society, and the Pharmaceutical Society of Great Britain; the Röntgen Society, the Society of Public Analysts, the Psychological Society, the Royal Anthropological Institute, and the Institute of Chemistry and the Chemical Society are also represented. The Board has a large number of committees; one of these, the Watching Committee on Education, has not been reappointed, as it is considered to have accomplished its purpose in the presentation of a joint report with the Council for Humanistic Studies, which was published under the title *Education: Secondary and University*. Its chief recommendation was that the first school examination intended by the Board of Education to be taken at about 16½ years of age should be a test of general knowledge, and should always include English language and literature, and four other groups of subjects—languages and literature other than English, history and geography, mathematics, and natural science. At the same time it was recommended that excellence in two of these groups, combined with evidence of adequate school training in all four, should be allowed to compensate for weakness in one group. It was recommended that in order to avoid premature and excessive specialization at schools, the scope of scholarship examinations should be enlarged so as to allow credit to be given for general ability, and not alone for excellence in one special department, whether literary or scientific. One of the effects of the disturbances of commerce due to the war was difficulty in obtaining glue and other adhesives; a committee was appointed which instituted researches under the direction of Professor S. B. Schryver. Investigations on the methods of preparing gelatines and glues from various tissues were carried out and results obtained which it is thought will be of value not only in the manufacture of gelatines, but in the production of gelatine for use in photography and for making foodstuffs. Investigations were also made into the preparation of adhesives from casein and from the residue of castor beans after expression of the oil.

Letters, Notes, and Answers.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Meditsecra, Westrand, London*; telephone, 2634, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*: telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

M. C. wishes to hear of a natural sulphur water for internal consumption, containing little or no calcium.

C. S. invites suggestions as to the preventive treatment of nocturnal cramps in the legs; the patient is an extremely healthy old lady.

D. J. M. asks (1) whether any of the typhoid group is known to be louse-borne, and (2) whether milch cows which have access to contaminated water for drinking communicate typhoid through their milk.

INCOME TAX.

V. P. has in the past included an honorarium received as visiting physician to an institution in the income tax return for his general practice under Schedule D. He understands that some of his colleagues are not charged on similar honorariums on the strength of a recent "legal opinion."

*** The principle involved seems to us to be covered by the decision of the House of Lords that Easter offerings are assessable on the clergy, which implies that a fee or honorarium received for services rendered is liable to tax apart from any question of *quantum meruit*. If our correspondent can throw a little more light on the source and foundation of the "legal opinion," we should be pleased to consider the question further.

"BOMO" came to the United Kingdom from the Malay Peninsula, arriving on February 21st, 1920. At what date does he become liable to income tax—on August 21st, 1920, or October 5th, 1920?

*** Our correspondent is not liable to tax if he leaves the country before October 5th. That is as the law stands. There has been some discussion of the question before the Royal Commission, as a result of which the law may possibly be altered in the future, and this may perhaps account for the conflicting opinions which "Bomo" has gathered. We assume that he has not retained a residence for his family in this country during his absence abroad.

LETTERS, NOTES, ETC.

ACUTE PULMONARY OEDEMA.

DR. JOHN BROWN (Bearpark, Durham) writes: The following case of acute pulmonary oedema occurred in my practice a few years ago: M. P., aged 27, a 2-para, was delivered of a full-term healthy male child. Labour was absolutely normal. Neither ergot nor help of any kind was given. About a quarter of an hour after delivery the patient began to cough. She coughed so incessantly that the binder could not be pinned. At first the cough was dry, but in a few minutes was accompanied with expectoration of white, frothy fluid. A hasty examination discovered the chest full of râles. The expectoration soon became very abundant and the patient rapidly cyanosed; she died in less than half an hour from the commencement of the cough. She was given strychnine hypodermically and mustard was applied back and front, but without any effect. She was a strong, healthy woman, but I was informed that during her pregnancy she had been troubled more or less with a cough, but not bad enough to seek advice about. Occurring so soon after delivery, one at first thought of pulmonary embolism, but from the abundant white and frothy expectoration and rapid course it was clearly a case of acute pulmonary oedema.

DR. D. W. SAMWAYS (Mentone) writes: Some years ago I was asked to see a lady in consultation in England. I recognized the malady as acute oedema of the lungs from the excessive frothy expectoration, and suggested that atropin should be given subcutaneously at suitable intervals. The oedema disappeared rapidly, and had practically cleared up within a day or two. I had never seen another case, and I advised atropin chiefly on theoretical grounds, though in acute nasal catarrh I have seen complete relief, at least temporarily, after a single injection, and a similar result seemed not unlikely with the pulmonary tissue involved. Judging from the letters lately published on this subject atropin seems almost a specific in acute pulmonary oedema.

THE VALUE OF CALCIUM LACTATE.

DR. GARRY SIMPSON (Lancaster Gate, W.) writes: I feel sure many practitioners must have been disappointed with calcium lactate as a haemostatic. This is due to the fact that its therapetic value is greatly diminished by keeping, the compressed form being practically useless. I have of late been in the habit of using freshly prepared calcium lactate, with the most gratifying results. In a recent case a child 3 years old in which I removed tonsils and adenoids, the blood lost would hardly fill an egg-cup.

The following is the method for preparing the drug:

℞ Acid. lactic., 75 per cent.	gr. 140
Aq. dest.	ʒ iv
To which add in successive portions	
Calc. carb. praecip.	gr. 58
After effervescence subsides add	
Tr. capsici	♏ xij
Syr. limonis	ʒ iij
Aq. chloroformi ... ... ad	ʒ vj

Each half-ounce contains calc. lact. recentis gr. 10.

The dose for a child should be from ten to fifteen grains three times a day for not more than three days before operation. Continued administration is said to diminish the coagulability of the blood.

THE ANTISPIRITUALISTIC VACCINE.

AN editorial article in the *Journal of the American Medical Association* of March 27th, commenting on spiritualism and the spokesmen of the cult, refers to the propaganda of two well-known English exponents, the one a physicist and the other a physician who "has long left the medical field for more interesting adventures." "We should assume," says the article, "that a mind adjusted to the thought-habits of to-day would have set up a resistance to any such beliefs so completely adequate as to reject them without effort. Education is the vaccination that confers immunity; but it does not always take."

A RECORD TRAMP?

DR. H. T. BARTON (Blackpool) writes: Colonel Burnham's walk of twenty-three miles at the rate of five miles an hour is under the circumstances an excellent performance. As he wishes to hear of similar efforts of veteran walkers, I give details of some performances accomplished during the past winter by a general practitioner whose qualification dates back thirty-two years: 1 mile covered in 7 min. 40 sec., 4 miles in 35 min. 50 sec., 6 miles in 55 min. 45 sec., 4¾ miles in 43 min. 15 sec.

VENEREAL DISEASE IN THE PORTSMOUTH AREA.

BY an obvious error in our article on p. 681, column 1, third paragraph, line 58 (May 15th, 1920), we are made to say that according to White Paper Cmd. 505 the rate of incidence of venereal disease in the Portsmouth area was 47.3 *per cent.* It is clear from the context that this should read "per 1,000."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 32, 35, 36, 37, 38, and 39 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 33, 34, and 35.

AN appointment of medical referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Lanark is vacant. Applications to the Private Secretary, Scottish Office, Whitehall, S.W.1, by June 5th.

THE appointment of certifying factory surgeon at Bollington (Chester) is vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	7	6
Each additional line...	0	1	3
Whole single column	6	0	0
Whole page	16	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.